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Val Thr Leu Gly Thr Ala Ser Val His Ile Asn Gly Leu Gly Pro Val
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Asn Ala Gly Val Pro Gln Leu Val Leu Pro Asp Gly Ala Asp Arg His
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Ile Asn Ala Glu Ala Val Arg Asp Arg Gly Ala Gly Leu Leu Gly Thr
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Ala Asp Asp Leu Ser Ala Glu Val Leu Val Gln Leu Leu Ser Asp Glu
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<213> *Streptomyces aizunensis*

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Gln Gln Arg Leu Thr Gly Leu Thr Glu Ala Glu Gln His Thr Ala Leu
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Leu Glu Trp Val Ser Ser Leu Ala Ser Ala Leu Arg Asp Ala Ala
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Pro Asp Thr Leu Asp Pro His Arg Pro Phe Leu Asp Leu Gly Phe Asp
65          70          75          80

Ser Leu Ala Ala Val Asp Leu His Ala Arg Leu Val Ala Gly Thr Gly
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Leu Arg Leu Pro Val Thr Leu Ala Phe Asp His Pro Thr Pro Ala His
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Leu Ala Arg His Leu His Ala Ala Ile Leu Gly Leu Thr Gly Pro Ala
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Glu Thr Pro Val Thr Ala Ala Val Gly Ser Asp Glu Pro Ile Ala Ile
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Val Gly Ile Gly Cys His Phe Pro Gly Gly Val Gln Ser Pro Glu Ala
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Leu Trp Asn Leu Val Glu Thr Gly Thr Asp Ala Ile Ser Ala Phe Pro
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Thr Gly Arg Gly Trp Asp Leu Asp Ala Leu Tyr Asp Pro Asp Pro Asp
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Arg Ala Gly Thr Ser Tyr Ala Arg Glu Gly Gly Phe Leu His Asp Ala
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Asp Ala Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu
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 Ser Val Ala Ser Gly Arg Ile Ala Tyr Thr Phe Gly Phe Glu Gly Pro
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 Pro His Met Asp Ala Met Leu Glu Glu Phe Leu Arg Val Ala Gln Val
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Ser Arg	Leu Val Gly Val	Leu	Ala Gly Ser Gly	Glu	Asp Gln Val
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Ala Val	Arg Ser Ser Gly	Val	Phe Gly Arg Arg	Leu	Val Arg Ala
1280		1285		1290	
Pro Arg	Ala Glu Gly Ala	Ser	Ala Trp Ser Pro	Thr	Gly Thr Val
1295		1300		1305	
Leu Val	Thr Gly Gly Thr	Gly	Val Leu Gly Gly	Arg	Val Ala Arg
1310		1315		1320	
Trp Leu	Ala Gly Ala Gly	Ala	Glu Arg Leu Val	Leu	Thr Ser Arg
1325		1330		1335	
Arg Gly	Leu Asp Ala Pro	Gly	Ala Val Glu Leu	Val	Glu Glu Leu
1340		1345		1350	
Thr Thr	Gly Phe Gly Val	Glu	Val Ser Val Val	Ala	Cys Asp Ala
1355		1360		1365	
Ala Asp	Arg Asp Ala Leu	Arg	Ala Leu Leu Ser	Ala	Glu Ala Gly
1370		1375		1380	
Ser Leu	Thr Ala Val Val	His	Thr Ala Gly Val	Leu	Asp Asp Gly
1385		1390		1395	
Val Leu	Asp Ala Leu Thr	Pro	Asp Arg Ile Asp	Ser	Val Val Arg
1400		1405		1410	
Ala Lys	Ala Val Ser Ala	Leu	Asn Leu His Glu	Leu	Thr Ala Glu
1415		1420		1425	
Leu Gly	Ile Glu Leu Ser	Asp	Phe Val Leu Phe	Ser	Ser Val Thr
1430		1435		1440	
Gly Thr	Val Gly Ala Ala	Gly	Gln Ala Asn Tyr	Ala	Ala Ala Asn
1445		1450		1455	
Ala Phe	Leu Asp Ala Leu	Ala	Glu Gln Arg Arg	Ala	Asp Gly Leu
1460		1465		1470	
Ala Ala	Thr Ser Ile Ala	Trp	Gly Pro Trp Ala	Glu	Gly Gly Met
1475		1480		1485	
Ala Ala	Asp Glu Ala Met	Asp	Ala Arg Met Arg	Arg	Glu Gly Met
1490		1495		1500	
Pro Pro	Met Ala Pro Thr	Ser	Ala Met Ser Ala	Leu	Glu Gln Ala
1505		1510		1515	
Val Gly	Ala Gly Glu Thr	Ala	Leu Thr Val Ala	Asp	Ile Asp Trp
1520		1525		1530	

Glu Arg	Phe Ser Ser Val	Ile	Ala Ala Val Arg	Pro	Asn Pro Leu
1535		1540		1545	
Ile Gly	Asp Phe Val Val	Gly	Ala Glu Gly Thr	Ala	Ala Ala Ser
1550		1555		1560	
Gly His	Gly Ser Val Val	Thr	Gly Ala Asp Val	Ala	Ala Thr Val
1565		1570		1575	
Ser Gly	Arg Leu Ala Gly	Leu	Thr Gln Ala Glu	Gln	Glu Arg Glu
1580		1585		1590	
Leu Leu	Ser Leu Val Arg	Leu	His Val Ala Ala	Val	Leu Gly His
1595		1600		1605	
Asp Gly	Ser Asp Ala Val	Gly	Ala Glu Arg Ala	Phe	Lys Glu Leu
1610		1615		1620	
Gly Phe	Asp Ser Leu Thr	Ser	Val Glu Leu Arg	Asn	Arg Leu Gly
1625		1630		1635	
Ala Ala	Thr Asp Leu Arg	Leu	Pro Thr Thr Leu	Val	Tyr Asp Tyr
1640		1645		1650	
Pro Thr	Ser Ala Ala Leu	Ala	Glu Tyr Leu Arg	Gly	Glu Leu Ala
1655		1660		1665	
Gly Ser	Ala Gln Asp Ala	Gly	Pro Pro Leu Pro	Ala	Val Val Gly
1670		1675		1680	
Ser Ala	Ala Asp Asp Asp	Pro	Ile Val Ile Val	Ser	Met Ser Cys
1685		1690		1695	
Arg Phe	Pro Gly Gly Val	Arg	Thr Pro Glu Asp	Leu	Trp Gln Leu
1700		1705		1710	
Leu Ala	Asp Gly Thr Asp	Thr	Val Ala Ala Phe	Pro	Ala Asp Arg
1715		1720		1725	
Gly Trp	Asp Leu Asp Gly	Leu	Tyr Ser Ala Asp	Pro	Glu Arg Ser
1730		1735		1740	
Gly Thr	Ser Tyr Thr Arg	Glu	Gly Gly Phe Leu	Tyr	Asp Ala Ala
1745		1750		1755	
Asp Phe	Asp Ala Asp Phe	Phe	Gly Ile Ser Pro	Arg	Glu Ala Leu
1760		1765		1770	
Ala Met	Asp Pro Gln Gln	Arg	Leu Leu Leu Glu	Thr	Ala Trp Glu
1775		1780		1785	
Thr Phe	Glu Arg Ala Gly	Ile	Asp Pro Ala Ser	Leu	Arg Gly Ser
1790		1795		1800	
Gln Ala	Gly Val Phe Val	Gly	Thr Asn Gly Gln	Asp	Tyr Leu Ser
1805		1810		1815	
Leu Val	Thr Arg Glu Gly	Asp	Gly Leu Asp Gly	Leu	Glu Gly His
1820		1825		1830	
Val Gly	Thr Gly Asn Ala	Ala	Ser Val Val Ser	Gly	Arg Leu Ser
1835		1840		1845	

Tyr Val	Phe Gly	Leu Glu	Gly	Pro Ala	Ile Thr	Val	Asp Thr	Ala
1850			1855			1860		
Cys Ser	Ser Ser	Leu Val	Ala	Leu His	Leu Ala	Val	Gln Ala	Leu
1865			1870			1875		
Arg Gln	Gly Glu	Cys Thr	Leu	Ala Leu	Ala Gly	Gly	Val Thr	Val
1880			1885			1890		
Met Ser	Thr Pro	Asp Ala	Phe	Val Asp	Phe Ser	Arg	Gln Arg	Gly
1895			1900			1905		
Leu Ala	Glu Asp	Gly Arg	Ile	Lys Ala	Phe Ala	Ser	Ala Ala	Asp
1910			1915			1920		
Gly Thr	Gly Trp	Gly Glu	Gly	Val Gly	Met Leu	Leu	Val Glu	Arg
1925			1930			1935		
Leu Ser	Asp Ala	Arg Arg	Asn	Gly His	Pro Val	Leu	Ala Val	Val
1940			1945			1950		
Arg Gly	Ser Ala	Ile Asn	Gln	Asp Gly	Ala Ser	Asn	Gly Leu	Thr
1955			1960			1965		
Ala Pro	Asn Gly	Pro Ser	Gln	Gln Arg	Val Ile	Arg	Gln Ala	Leu
1970			1975			1980		
Ala Gly	Ala Gly	Leu Ser	Ala	Ala Asp	Val Asp	Ala	Val Glu	Ala
1985			1990			1995		
His Gly	Thr Gly	Thr Arg	Leu	Gly Asp	Pro Ile	Glu	Ala Gln	Ala
2000			2005			2010		
Leu Leu	Ala Thr	Tyr Gly	Gln	Gly Arg	Pro Ala	Asp	Arg Pro	Leu
2015			2020			2025		
Trp Leu	Gly Ser	Val Lys	Ser	Asn Ile	Gly His	Thr	Gln Ala	Ala
2030			2035			2040		
Ala Gly	Val Ala	Gly Val	Met	Lys Met	Val Met	Ala	Met Arg	His
2045			2050			2055		
Gly Val	Leu Pro	Arg Thr	Leu	His Val	Asp Gly	Pro	Thr Pro	His
2060			2065			2070		
Val Asp	Trp Ser	Ala Gly	Asp	Val Ala	Leu Leu	Thr	Glu Gln	Arg
2075			2080			2085		
Glu Trp	Pro Ala	Thr Gly	His	Pro Arg	Arg Ala	Gly	Val Ser	Ser
2090			2095			2100		
Phe Gly	Leu Ser	Gly Thr	Asn	Ala His	Thr Ile	Ile	Glu Glu	Ala
2105			2110			2115		
Pro Ala	Asp Asp	Asp Ala	Glu	Pro Thr	Thr Gly	Ala	Gly Thr	Ala
2120			2125			2130		
Pro Ser	Val Leu	Pro Leu	Leu	Ile Ser	Ala Lys	Ser	Asp Ala	Gly
2135			2140			2145		
Leu Arg	Ala Gln	Ser Glu	Gln	Leu Ala	Thr His	Leu	Val Gly	Asn
2150			2155			2160		

Pro Asp Val Pro Ile Gly Asp	Ile Ala Tyr Ser Leu Thr Thr Gly
2165	2170 2175
Arg Ser Gly Leu Glu Thr Arg	Ala Ile Leu Val Gly Asp Ala Asp
2180	2185 2190
Asn Arg Thr Gly Leu Ala Ala	Ala Leu Arg Ser Leu Ala Ala Gly
2195	2200 2205
Glu Gln Ala Pro Gly Leu Val	Gln Gly Thr Val Thr Glu Gly Gly
2210	2215 2220
Leu Ala Phe Leu Phe Thr Gly	Gln Gly Ser Gln Arg Leu Gly Met
2225	2230 2235
Gly Arg Glu Leu Tyr Glu Thr	Tyr Pro Val Phe Ala Asp Ala Leu
2240	2245 2250
Asp Ala Val Cys Ala Arg Met	Asp Leu Glu Val Pro Leu Arg Asp
2255	2260 2265
Val Leu Phe Gly Ala Tyr Ala	Gly Leu Leu Asp Glu Thr Ala Tyr
2270	2275 2280
Thr Gln Pro Ala Leu Phe Ala	Val Glu Val Ala Leu Phe Arg Leu
2285	2290 2295
Val Glu Ser Trp Gly Leu Arg	Pro Asp Phe Val Ala Gly His Ser
2300	2305 2310
Ile Gly Glu Ile Ala Ala Ala	His Val Ala Gly Val Leu Ser Leu
2315	2320 2325
Asp Asp Ala Cys Ala Leu Val	Glu Ala Arg Gly Arg Leu Met Gly
2330	2335 2340
Ala Leu Pro Gly Gly Gly Val	Met Ile Ala Val Gln Ala Pro Glu
2345	2350 2355
Ala Glu Val Leu Pro Leu Leu	Thr Glu Arg Val Ser Ile Ala Ala
2360	2365 2370
Ile Asn Gly Pro Gln Ser Val	Val Ile Ala Gly Asp Glu Ala Asp
2375	2380 2385
Ala Val Ala Ile Val Glu Ser	Phe Thr Gly Arg Lys Ser Lys Arg
2390	2395 2400
Leu Thr Val Ser His Ala Phe	His Ser Pro His Met Asp Gly Met
2405	2410 2415
Leu Glu Asp Phe Arg Ala Val	Ala Glu Gly Leu Ser Tyr Glu Ala
2420	2425 2430
Pro Arg Ile Pro Val Val Ser	Asn Leu Thr Gly Ala Leu Val Ser
2435	2440 2445
Asp Glu Met Gly Ser Ala Glu	Phe Trp Val Arg His Val Arg Glu
2450	2455 2460
Ala Val Arg Phe Leu Asp Gly	Met Arg Val Leu Glu Ala Ala Gly
2465	2470 2475

Val Thr Thr Tyr Val Glu Leu Gly Pro Gly Gly Val Leu Ser Ala	2480	2485	2490
Leu Ala Gln Glu Cys Val Ser Gly Asp Gly Ala Ala Phe Val Pro	2495	2500	2505
Val Leu Arg Ser Gly Arg Pro Glu Ala Glu Thr Ala Val Thr Ala	2510	2515	2520
Leu Ala Gln Ala His Val Arg Gly Val Asp Val Asp Trp Ala Ala	2525	2530	2535
Phe Phe Ser Gly Thr Gly Val Gln Arg Val Asp Leu Pro Thr Tyr	2540	2545	2550
Ala Phe Gln Arg Gln Arg Phe Trp Pro Ala Met Thr Ala Glu Ser	2555	2560	2565
Ala Pro Val Gly Gly Thr Val Asp Ala Val Asp Ala His Phe Trp	2570	2575	2580
Asp Val Ile Glu Gln Glu Asp Val Glu Ser Leu Ala Glu Leu Leu	2585	2590	2595
Gly Leu Asp Asp Ala Ser Ala Trp Gly Ser Val Val Pro Ala Leu	2600	2605	2610
Ser Ala Trp Arg Arg Gln Gly Gln Gln Gln Ala Gln Val Asp Gly	2615	2620	2625
Trp Arg Tyr Arg Ala Ser Trp Lys Pro Val Thr Ala Ala Val Ser	2630	2635	2640
Ser Gly Val Val Ser Gly Thr Trp Val Val Ala Val Pro Ala Gly	2645	2650	2655
Ser Ala Gly Asp Asp Ala Arg Val Glu Ala Val Thr Asn Gly Leu	2660	2665	2670
Ala Gly Arg Gly Val Asp Val Arg Arg Val Val Val Glu Ala Gly	2675	2680	2685
Val Asp Arg Ala Ala Leu Ala Gly Leu Leu Ala Gly Glu Gly Ser	2690	2695	2700
Leu Ala Gly Val Val Ser Leu Leu Gly Leu Asp Glu Ser Gly Gly	2705	2710	2715
Leu Ala Ala Thr Ala Gly Leu Val Gln Ala Leu Gly Asp Ala Gly	2720	2725	2730
Val Ser Ala Pro Leu Trp Cys Leu Thr Arg Gly Ala Val Ser Val	2735	2740	2745
Gly Arg Ser Asp Arg Leu Val Ser Pro Val Gln Ala Gln Val Trp	2750	2755	2760
Gly Leu Gly Arg Val Ala Ala Leu Glu Val Pro Glu Arg Trp Gly	2765	2770	2775
Gly Leu Val Asp Leu Pro Glu Val Leu Asp Glu Arg Ala Val Ser	2780	2785	2790

Arg Leu Ile Gly Val Leu Ala	Gly Ser Gly Glu Asp Gln Val Ala
2795	2800 2805
Val Arg Ser Ser Gly Val Phe	Gly Arg Arg Leu Val Arg Ala Pro
2810	2815 2820
Arg Ala Glu Gly Ala Ala Ser	Trp Thr Pro Thr Gly Thr Val Leu
2825	2830 2835
Val Thr Gly Gly Thr Gly Val	Leu Gly Gly Arg Val Ala Arg Trp
2840	2845 2850
Leu Ala Gly Ala Gly Ala Glu	Arg Leu Val Leu Thr Ser Arg Arg
2855	2860 2865
Gly Leu Asp Ala Pro Gly Thr	Ala Glu Leu Val Glu Glu Leu Thr
2870	2875 2880
Ser Ser Gly Val Glu Val Ser	Val Val Ala Cys Asp Ala Ala Asp
2885	2890 2895
Arg Asp Ala Leu Arg Ala Leu	Leu Ser Ser Glu Ala Gly Ser Leu
2900	2905 2910
Thr Ala Val Ile His Thr Ala	Gly Val Leu Asp Asp Gly Val Leu
2915	2920 2925
Asp Ala Leu Thr Pro Asp Arg	Ile Asp Gly Val Val Arg Ala Lys
2930	2935 2940
Ala Val Ser Ala Leu Asn Leu	His Glu Leu Thr Ala Glu Leu Gly
2945	2950 2955
Ile Glu Leu Ser Ala Phe Val	Leu Phe Ser Ser Met Ser Gly Thr
2960	2965 2970
Val Gly Thr Ala Gly Gln Ala	Asn Tyr Ala Ala Ala Asn Ala Tyr
2975	2980 2985
Leu Asp Ala Leu Ala Glu Gln	Arg Arg Ala Asp Gly Leu Ala Ala
2990	2995 3000
Thr Ser Ile Ala Trp Gly Pro	Trp Ala Glu Gly Gly Met Ala Ala
3005	3010 3015
Asp Ala Ala Leu Glu Ala Arg	Met Arg Arg Asp Gly Val Pro Pro
3020	3025 3030
Met Pro Ala Asp Pro Ala Ile	Arg Ala Leu Arg Gln Ala Val Ala
3035	3040 3045
Gly Asp Asp Ala Val Leu Thr	Val Ala Asp Val Glu Trp Asp Arg
3050	3055 3060
Phe Leu Pro Gly Phe Val Ala	Ala Arg His Ser Glu Leu Phe Ser
3065	3070 3075
Glu Leu Arg Asp Val Arg Asp	Ala Arg Ala Ala Gln Asp Arg Ala
3080	3085 3090
Gln Ala Ala Val Ala Ala Asp	Arg Pro Asp Ser Leu Ser Gly Arg
3095	3100 3105

Leu Ser Ala Gln Ala Pro Ala Glu Gln Glu Arg Glu Leu Leu Asp
 3110 3115 3120
 Leu Val Arg Thr Gln Val Ala Ala Val Leu Gly His Ala Gly Val
 3125 3130 3135
 Glu Asn Val Gly Ala Gly Arg Ala Phe Lys Glu Leu Gly Phe Asp
 3140 3145 3150
 Ser Leu Met Ala Val Glu Leu Arg Asn Arg Ile Gly Ser Ala Thr
 3155 3160 3165
 Glu Leu Arg Leu Pro Ala Thr Leu Ile Tyr Asp His Pro Thr Ser
 3170 3175 3180
 Ala Ala Leu Ala Glu Phe Leu Arg Gly Glu Leu Val Gly Thr Val
 3185 3190 3195
 Arg Val Ala Asp Lys Val Leu Pro Ala Val Val Ser Ala Asp Glu
 3200 3205 3210
 Asp Pro Ile Ala Ile Val Ser Met Ser Cys Arg Phe Pro Gly Gly
 3215 3220 3225
 Val Arg Thr Pro Glu Asp Leu Trp Arg Leu Leu Val Asp Gly Thr
 3230 3235 3240
 Asp Ala Val Gly Ala Phe Pro Ala Asp Arg Gly Trp Asp Leu Asp
 3245 3250 3255
 Arg Leu Tyr Ser Pro Asp Pro Asp Gln Pro Gly Thr Ser Tyr Thr
 3260 3265 3270
 Arg Glu Gly Gly Phe Phe Asp Gly Ala Ala Asp Phe Asp Pro Gly
 3275 3280 3285
 Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln
 3290 3295 3300
 Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Ile Glu Arg Ala
 3305 3310 3315
 Gly Ile Asp Pro Ser Ser Leu Arg Gly Ser Gln Ala Gly Val Phe
 3320 3325 3330
 Val Gly Thr Asn Gly Gln Asp Tyr Leu Ser Leu Ile Thr Arg Glu
 3335 3340 3345
 Ser Glu Gly Leu Glu Gly His Leu Gly Thr Gly Asn Ala Gly Ser
 3350 3355 3360
 Val Met Ser Gly Arg Val Ser Tyr Val Leu Gly Leu Glu Gly Pro
 3365 3370 3375
 Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu
 3380 3385 3390
 His Trp Ala Ile Gln Ala Leu Arg Gln Gly Glu Cys Ser Met Ala
 3395 3400 3405
 Leu Ala Gly Gly Val Thr Val Met Ser Thr Pro Glu Asn Phe Val
 3410 3415 3420

Asp Phe	Ser Arg	Gln Arg	Gly	Leu Ala	Glu Asp	Gly	Arg Ile	Lys	
3425			3430			3435			
Ala Phe	Ala Ser	Ala Ala	Asp	Gly Thr	Gly Trp	Gly	Glu Gly	Val	
3440			3445			3450			
Gly Met	Leu Leu	Val Glu	Arg	Leu Ser	Asp Ala	Arg	Arg Asn	Gly	
3455			3460			3465			
His Pro	Val Leu	Ala Val	Val	Arg Gly	Ser Ala	Val	Asn Gln	Asp	
3470			3475			3480			
Gly Ala	Ser Asn	Gly Leu	Thr	Ala Pro	Asn Gly	Pro	Ser Gln	Gln	
3485			3490			3495			
Arg Val	Ile Arg	Ala Ala	Leu	Ala Ser	Ala Gly	Leu	Ser Ala	Ala	
3500			3505			3510			
Asp Val	Asp Val	Val Glu	Ala	His Gly	Thr Gly	Thr	Lys Leu	Gly	
3515			3520			3525			
Asp Pro	Ile Glu	Ala Gln	Ala	Leu Leu	Ala Thr	Tyr	Gly Gln	Asp	
3530			3535			3540			
Arg Pro	Ala Gly	Arg Pro	Leu	Trp Leu	Gly Ser	Ile	Lys Ser	Asn	
3545			3550			3555			
Ile Gly	His Thr	Gln Ala	Ala	Ala Gly	Val Ala	Gly	Ile Ile	Lys	
3560			3565			3570			
Met Val	Leu Ala	Met Gln	His	Gly Val	Leu Pro	Gln	Thr Leu	His	
3575			3580			3585			
Val Asp	Glu Pro	Thr Pro	His	Val Asp	Trp Ser	Ala	Gly Glu	Val	
3590			3595			3600			
Thr Leu	Leu Thr	Glu Gln	Thr	Ala Trp	Pro Thr	Val	Asp Arg	Pro	
3605			3610			3615			
Arg Arg	Ala Gly	Val Ser	Ser	Phe Gly	Ile Ser	Gly	Thr Asn	Ala	
3620			3625			3630			
His Thr	Ile Ile	Glu Gln	Ala	Pro Ala	Val Glu	Gln	Leu Ala	Asp	
3635			3640			3645			
Gly Asp	Ala Thr	Pro Ala	Thr	Pro Ala	Leu Ala	Leu	Pro Leu	Pro	
3650			3655			3660			
Tyr Val	Leu Ser	Ala Lys	Ser	Pro Glu	Ala Leu	Arg	Ala Gln	Ala	
3665			3670			3675			
Ser Val	Leu Arg	Thr His	Leu	Glu Ala	Thr Asp	His	Asn Gly	Pro	
3680			3685			3690			
Gly Ser	Asp Asp	Leu Ala	Phe	Ser Leu	Ala Thr	Ala	Arg Ala	His	
3695			3700			3705			
Leu Glu	His Arg	Ala Val	Leu	Thr Ala	Asp Asp	Pro	Gln Glu	Phe	
3710			3715			3720			
Arg Glu	Ala Leu	Ala Arg	Leu	Ala Asp	Gly Asp	Pro	Ser Pro	Arg	
3725			3730			3735			

Ile Thr	Thr Gly	Ala Val	Ser	Asp Gly	Arg Thr	Ala	Phe Leu	Phe
3740			3745			3750		
Thr Gly	Gln Gly	Ser Gln	Arg	Leu Gly	Met Gly	Arg	Glu Leu	Tyr
3755			3760			3765		
Glu Ala	Tyr Pro	Val Phe	Ala	Asp Ala	Leu Asp	Ala	Val Cys	Ala
3770			3775			3780		
His Val	Asp Ala	His Leu	Glu	Val Pro	Leu Lys	Asp	Val Leu	Phe
3785			3790			3795		
Gly Ala	Asp Ala	Gly Leu	Leu	Asp Gln	Thr Ala	Tyr	Thr Gln	Pro
3800			3805			3810		
Ala Leu	Phe Ala	Val Glu	Val	Ala Leu	Phe Arg	Leu	Val Glu	Ser
3815			3820			3825		
Trp Gly	Val Lys	Pro Asp	Phe	Val Ala	Gly His	Ser	Ile Gly	Glu
3830			3835			3840		
Ile Ala	Ala Ala	His Val	Ala	Gly Val	Phe Ser	Leu	Gln Asp	Ala
3845			3850			3855		
Ser Glu	Leu Val	Phe Ala	Arg	Gly Arg	Leu Met	Gln	Ala Leu	Pro
3860			3865			3870		
Thr Gly	Gly Val	Met Ile	Ala	Val Gln	Ala Ser	Glu	Asp Glu	Val
3875			3880			3885		
Leu Pro	Leu Leu	Thr Asp	Arg	Val Ser	Ile Ala	Ala	Ile Asn	Gly
3890			3895			3900		
Pro Gln	Ser Val	Val Ile	Ala	Gly Asp	Glu Ala	Asp	Ala Val	Ala
3905			3910			3915		
Ile Ala	Glu Ser	Phe Thr	Asp	Arg Lys	Ser Lys	Arg	Leu Thr	Val
3920			3925			3930		
Ser His	Ala Phe	His Ser	Pro	His Met	Asp Gly	Met	Leu Asp	Ala
3935			3940			3945		
Phe Arg	Glu Ile	Ala Glu	Gly	Leu Ser	Tyr Glu	Pro	Ser Arg	Ile
3950			3955			3960		
Pro Val	Val Ser	Asn Leu	Thr	Gly Ala	Leu Val	Ser	Asp Glu	Met
3965			3970			3975		
Gly Ser	Ala Glu	Phe Trp	Val	Arg His	Val Arg	Glu	Ala Val	Arg
3980			3985			3990		
Phe Leu	Asp Gly	Ile Arg	Thr	Leu Glu	Ala Ala	Gly	Val Thr	Lys
3995			4000			4005		
Tyr Val	Glu Leu	Gly Pro	Asp	Gly Val	Leu Ser	Ala	Met Ala	Gln
4010			4015			4020		
Asp Cys	Val Ser	Gly Glu	Gly	Ser Val	Phe Ile	Pro	Val Leu	Arg
4025			4030			4035		
Lys Ala	Arg Pro	Glu Ala	Glu	Ser Val	Thr Thr	Ala	Leu Ala	Ser
4040			4045			4050		

Ala His 4055	Val His Gly Ile	Pro 4060	Val Asp Trp Gln	Ala 4065	Tyr Phe Ala
Gly Thr 4070	Gly Ala Gln Arg	Val 4075	Asp Leu Pro Thr	Tyr 4080	Ala Phe Gln
Arg Gln 4085	Arg Tyr Trp Pro	Ser 4090	Ala Ala Ala Phe	Val 4095	Thr Gly Asp
Pro Thr 4100	Ala Ile Gly Leu	Gly 4105	Asp Ala Gly His	Pro 4110	Leu Leu Gly
Ala Ala 4115	Val Ala Leu Ala	Asp 4120	Ser Glu Gly Val	Leu 4125	Phe Thr Gly
Arg Leu 4130	Ser Leu Asp Thr	His 4135	Pro Trp Leu Ala	Asp 4140	His Thr Ile
Leu Gly 4145	Ser Val Leu Leu	Pro 4150	Gly Thr Ala Phe	Val 4155	Asp Leu Ala
Ile Arg 4160	Ala Gly Asp Gln	Val 4165	Gly Cys Asp Val	Val 4170	Glu Glu Leu
Thr Leu 4175	Glu Ala Pro Leu	Val 4180	Val Pro Gln Arg	Gly 4185	Gly Val Gln
Leu Gln 4190	Leu Val Val Glu	Ala 4195	Pro Ser Gly Pro	Gly 4200	Gln Arg Pro
Phe Ser 4205	Val His Ser Arg	Arg 4210	Gln Asp Ala Tyr	Ala 4215	Glu Glu Pro
Trp Met 4220	Arg His Ala Ser	Gly 4225	Val Leu Thr Ser	Gly 4230	Val Ser Arg
Arg Glu 4235	Leu Ser Val Glu	Gly 4240	Gly Glu Phe Glu	Ala 4245	Leu Ala Val
Trp Pro 4250	Pro Thr Gly Ala	Val 4255	Pro Val Asp Val	Arg 4260	Gly Leu Tyr
Glu Glu 4265	Leu Ala Glu Ala	Gly 4270	Val Ala Tyr Gly	Pro 4275	Leu Phe Gln
Gly Leu 4280	Lys Ala Ala Trp	Arg 4285	Arg Asp Gly Glu	Leu 4290	Phe Thr Glu
Val Ala 4295	Leu Pro Gly Glu	Ala 4300	Arg Arg Glu Ala	Ala 4305	Arg Phe Gly
Leu His 4310	Pro Ala Leu Leu	Asp 4315	Ala Gly Leu His	Ala 4320	Ile Gly His
Gly Glu 4325	Gly Pro Glu Pro	Ala 4330	Met Thr Gly Ala	Leu 4335	Leu Pro Phe
Ser Trp 4340	Ala Gly Val Ser	Leu 4345	Tyr Ala Ala Gly	Ala 4350	Ser Ser Leu
Arg Met 4355	Arg Leu Thr Pro	His 4360	Thr Pro Asp Asp	Ala 4365	His Thr Met

Ala Leu	Leu Val	Ala Asp	Glu Thr	Gly Arg	Pro Val	Ala Ala	Val
4370			4375			4380	
Glu Ser	Leu Ile	Leu Arg	Thr Ala	Ser Ala	Asp Gln	Val Arg	Ala
4385			4390			4395	
Ala Asp	Gly Gly	His Leu	Asp Ser	Leu Phe	Lys Val	Glu Trp	Leu
4400			4405			4410	
Pro Val	Ala Gly	Gly Ala	Thr Pro	His Gly	Asp Ser	Thr Gly	Arg
4415			4420			4425	
Arg Trp	Ala Val	Leu Gly	Arg Asp	Gly Leu	Gly Leu	Pro Ala	Thr
4430			4435			4440	
Gly Val	Gln Gly	Gln Val	Ala Glu	Tyr Asp	Asp Ala	Ser Ala	Leu
4445			4450			4455	
Gly Ala	Ala Leu	Ala Ala	Gly Glu	Pro Val	Pro Asp	Ala Val	Phe
4460			4465			4470	
Val His	Pro Gly	Ala Leu	Pro Gly	Gln Asp	Thr Asp	Thr Thr	Ala
4475			4480			4485	
Ala Ser	Val His	Ala Ala	Val Thr	Asp Ala	Leu Ser	Phe Val	Gln
4490			4495			4500	
Glu Trp	Leu Ala	Asp Glu	Arg Phe	Ala Ala	Thr Arg	Leu Val	Trp
4505			4510			4515	
Leu Thr	Ser Gly	Ala Val	Ala Asp	Glu Pro	Gly Ala	Gly Val	Arg
4520			4525			4530	
Asp Leu	Ala Gly	Ser Ala	Val Arg	Gly Leu	Leu Arg	Ser Ala	Gln
4535			4540			4545	
Ser Glu	Asn Pro	Gly Gln	Leu Leu	Met Leu	Asp Leu	Asp Gln	Asp
4550			4555			4560	
Pro Ala	Ser Leu	Ala Ala	Leu Pro	Ala Ala	Leu Ala	Ala Gly	Glu
4565			4570			4575	
Pro Glu	Leu Ala	Ile Arg	Arg Gly	Glu Leu	Arg Thr	Pro Arg	Leu
4580			4585			4590	
Thr Arg	Val Pro	Ser Ala	Asp Ala	Ala Ala	Glu Pro	Leu Gly	Thr
4595			4600			4605	
Leu Gly	Asp Pro	Ser Gly	Thr Val	Leu Val	Thr Gly	Ala Thr	Gly
4610			4615			4620	
Thr Leu	Gly Gly	Leu Phe	Ala Arg	His Leu	Val Thr	Ala Tyr	Gly
4625			4630			4635	
Val Arg	Arg Leu	Leu Leu	Thr Ser	Arg Arg	Gly Pro	Glu Ala	Glu
4640			4645			4650	
Gly Ala	Ala Glu	Leu Val	Ala Glu	Leu Glu	Gln Leu	Gly Ala	His
4655			4660			4665	
Val Glu	Leu Val	Ala Cys	Asp Ala	Ala Asp	Arg Ser	Ala Leu	Ala
4670			4675			4680	

Ala Leu Leu Gly Ala Val Pro Ser Glu His Pro Leu Thr Ala Val
4685 4690 4695

Val His Thr Ala Gly Val Leu Asp Asp Gly Ile Leu Ser Ser Leu
4700 4705 4710

Thr Pro Glu Arg Val Ala Ala Val Leu Arg Pro Lys Val Asp Ala
4715 4720 4725

Ala Trp Asn Leu His Glu Leu Thr Arg Glu Leu Gly Leu Ser Ala
4730 4735 4740

Phe Val Leu Phe Ser Gly Ala Ala Ala Ala Phe Gly Ala Ala Gly
4745 4750 4755

Gln Gly Asn Tyr Ala Ala Ala Asn Ser Phe Leu Glu Ala Leu Ala
4760 4765 4770

Glu Gln Arg Arg Ala Glu Gly Leu Pro Ala Thr Ser Leu Ala Trp
4775 4780 4785

Gly Leu Trp Ala Pro Gln Thr Gly Gly Met Ala Gln Gln Leu Asp
4790 4795 4800

Glu Val Asp Leu Arg Arg Ile Ala Arg Asp Gly Val Gly Gly Leu
4805 4810 4815

Ser Gly Asp Glu Gly Leu Gly Leu Phe Asp Thr Ala Met Thr Val
4820 4825 4830

Asp Ala Ala Val Leu Leu Pro Met Arg Leu Asp Leu Ala Val Ala
4835 4840 4845

Arg Ala Gln Ala Val Ser Thr Gly Glu Thr Pro Ala Leu Leu Arg
4850 4855 4860

Ala Leu Ile Arg Val Pro Ala Arg Arg Ala Val Glu Gln Arg Thr
4865 4870 4875

Ala Ala Asp Gly Ala Ser Pro Leu Ala Ala Arg Leu Ser Ala Leu
4880 4885 4890

Pro Asp Ala Glu Arg Glu Asp Met Leu Leu Asp Leu Val Cys Gly
4895 4900 4905

Arg Val Ala Glu Val Leu Gly His Thr Asp Ala Arg Ala Val Asp
4910 4915 4920

Ala Asp Arg Ala Phe Lys Glu Leu Gly Phe Asp Ser Leu Thr Ala
4925 4930 4935

Val Glu Leu Arg Asn Val Leu Lys Ala Ala Thr Gly Leu Arg Leu
4940 4945 4950

Ser Pro Thr Leu Val Phe Asp Tyr Pro Thr Pro Val Ala Leu Ala
4955 4960 4965

Arg His Leu Leu Ala Glu Leu Ala Gly Thr Ala Asp Asp Gln Asp
4970 4975 4980

Ala Val Arg Gly Arg Lys Ala Pro Ala Arg Pro Ala Thr Ala Ala
4985 4990 4995

Val Thr Ser Val Thr Gly Glu Asp Pro Ile Val Ile Val Gly Met	
5000	5005 5010
Gly Cys Arg Phe Pro Gly Gly Val Arg Ser Pro Glu Asp Leu Trp	
5015	5020 5025
Gln Leu Val Ala Thr Gly Gly Asp Gly Ile Thr Gly Phe Pro Ser	
5030	5035 5040
Asp Arg Gly Trp Asn Val Glu Ala Leu Tyr His Pro Asp Pro Asp	
5045	5050 5055
His Ala Gly Thr Ser Tyr Thr Arg Glu Gly Gly Phe Leu His Asp	
5060	5065 5070
Ala Ala Asp Phe Asp Pro Gly Phe Phe Gly Ile Ser Pro Arg Glu	
5075	5080 5085
Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser	
5090	5095 5100
Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Ala Thr Leu Arg	
5105	5110 5115
Gly Ser Arg Thr Gly Val Phe Ala Gly Val Met Tyr His Asp Tyr	
5120	5125 5130
Val Thr Gly Ile Gly Asp Gly Gly Ser Ala Val Glu Leu Pro Glu	
5135	5140 5145
Gly Val Glu Gly Tyr Leu Gly Thr Gly Asn Ala Gly Ser Ile Ala	
5150	5155 5160
Ser Gly Arg Ile Ala Tyr Thr Phe Gly Leu Glu Gly Pro Ala Val	
5165	5170 5175
Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Leu His Trp	
5180	5185 5190
Ala Ile Gln Ala Leu Arg Ser Gly Glu Cys Thr Met Ala Leu Ala	
5195	5200 5205
Gly Gly Val Ala Val Met Ala Thr Pro Glu Thr Phe Val Asp Phe	
5210	5215 5220
Ser Arg Gln Arg Gly Leu Ser Ala Asp Gly Arg Cys Lys Ser Phe	
5225	5230 5235
Ala Ala Ala Ala Asp Gly Thr Gly Trp Ala Glu Gly Ala Gly Met	
5240	5245 5250
Leu Leu Val Glu Arg Leu Ser Asp Ala Glu Arg Asn Gly His Pro	
5255	5260 5265
Val Leu Ala Val Val Arg Gly Ser Ala Ile Asn Gln Asp Gly Ala	
5270	5275 5280
Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val	
5285	5290 5295
Ile Arg Glu Ala Leu Ala Ser Ala Asp Leu Ser Ala Ala Asp Ile	
5300	5305 5310

Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Arg	Leu	Gly	Asp	Pro
5315						5320					5325			
Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Arg	Glu	Arg	Glu
5330						5335					5340			
Ala	Gly	Arg	Pro	Leu	Trp	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly
5345						5350					5355			
His	Thr	Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Ile	Ile	Lys	Met	Val
5360						5365					5370			
Met	Ala	Met	Arg	His	Gly	Val	Leu	Pro	Gln	Thr	Leu	His	Val	Asp
5375						5380					5385			
Glu	Pro	Ser	Pro	Gln	Val	Asp	Trp	Glu	Ala	Gly	Glu	Val	Ser	Leu
5390						5395					5400			
Leu	Thr	Gly	Ala	Met	Pro	Trp	Pro	Gln	Thr	Gly	Arg	Pro	Arg	Arg
5405						5410					5415			
Ala	Gly	Val	Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Thr
5420						5425					5430			
Ile	Ile	Glu	Gln	Pro	Pro	Thr	Arg	Glu	Val	Thr	Pro	Thr	Val	Pro
5435						5440					5445			
Val	Ala	Pro	Val	Val	Pro	Thr	Val	Pro	Thr	Val	Pro	Val	Val	Pro
5450						5455					5460			
Trp	Val	Leu	Ser	Gly	Lys	Gly	Glu	Glu	Ala	Leu	Arg	Ala	Gln	Ala
5465						5470					5475			
Arg	Gln	Leu	Gln	Ser	Tyr	Val	Leu	Arg	Ala	Pro	Glu	Leu	Arg	Pro
5480						5485					5490			
Val	Asp	Ile	Ala	Gly	Ser	Leu	Ala	Val	Gly	Arg	Ala	Ser	Phe	Glu
5495						5500					5505			
Asp	Arg	Ala	Ala	Val	Val	Ala	Ala	Asp	Arg	Glu	Gly	Leu	Leu	Ala
5510						5515					5520			
Ala	Leu	Ala	Ala	Leu	Ala	Asp	Gly	Gly	Ser	Ala	Thr	Gly	Ala	Val
5525						5530					5535			
Glu	Gly	Ser	Ala	Val	Gly	Gly	Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly
5540						5545					5550			
Gln	Gly	Ser	Gln	Arg	Leu	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Glu	Ala
5555						5560					5565			
Tyr	Pro	Val	Phe	Ala	Glu	Ala	Leu	Asp	Ala	Val	Cys	Ala	Arg	Leu
5570						5575					5580			
Glu	Leu	Pro	Leu	Lys	Asp	Val	Leu	Phe	Gly	Ala	Asp	Ala	Gly	Leu
5585						5590					5595			
Leu	Asp	Glu	Thr	Ala	Tyr	Thr	Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu
5600						5605					5610			
Val	Ala	Leu	Phe	Arg	Leu	Val	Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp
5615						5620					5625			

Phe Val	Ala Gly	His Ser	Ile	Gly Glu	Ile Ala	Ala	Ala His	Val
5630			5635			5640		
Ala Gly	Val Phe	Ser Leu	Asp	Asp Ala	Cys Ala	Leu	Val Glu	Ala
5645			5650			5655		
Arg Gly	Arg Leu	Met Gly	Ala	Leu Pro	Ala Gly	Gly	Val Met	Ile
5660			5665			5670		
Ala Val	Gln Ala	Ser Glu	Asp	Glu Val	Leu Pro	Leu	Leu Thr	Asp
5675			5680			5685		
Arg Val	Ser Ile	Ala Ala	Ile	Asn Gly	Pro Arg	Ser	Val Val	Ile
5690			5695			5700		
Ala Gly	Asp Glu	Ala Asp	Ala	Val Ala	Ile Val	Glu	Ser Phe	Thr
5705			5710			5715		
Gly Arg	Lys Ser	Lys Arg	Leu	Thr Val	Ser His	Ala	Phe His	Ser
5720			5725			5730		
Pro His	Met Asp	Gly Met	Leu	Glu Asp	Phe Arg	Ala	Val Ala	Glu
5735			5740			5745		
Gly Leu	Ser Tyr	Glu Ala	Pro	Arg Ile	Pro Val	Val	Ser Asn	Leu
5750			5755			5760		
Thr Gly	Thr Leu	Val Thr	Asp	Glu Met	Gly Ser	Ala	Glu Phe	Trp
5765			5770			5775		
Val Arg	His Val	Arg Glu	Ala	Val Arg	Phe Leu	Asp	Gly Ile	Arg
5780			5785			5790		
Ala Leu	Glu Ala	Ala Gly	Val	Thr Thr	Tyr Val	Glu	Leu Gly	Pro
5795			5800			5805		
Gly Gly	Val Leu	Ser Ala	Leu	Ala Gln	Glu Cys	Val	Ser Gly	Asp
5810			5815			5820		
Gly Ala	Ala Phe	Val Pro	Val	Leu Arg	Ser Gly	Arg	Ser Glu	Ala
5825			5830			5835		
Glu Thr	Ala Val	Thr Ala	Leu	Ala Gln	Ala His	Val	Arg Gly	Val
5840			5845			5850		
Asn Val	Asp Trp	Ala Ala	Phe	Phe Ala	Gly Thr	Gly	Ala Glu	Arg
5855			5860			5865		
Val Asp	Leu Pro	Thr Tyr	Ala	Phe Gln	Arg Gln	Arg	Tyr Trp	Leu
5870			5875			5880		
His Ile	Pro Arg	Val Ala	Gln	Ser Gly	Val Ala	Asp	Glu Val	Asp
5885			5890			5895		
Ala Arg	Phe Trp	Asp Ala	Val	Glu Arg	Glu Asp	Leu	Glu Ser	Leu
5900			5905			5910		
Ala Ser	Thr Leu	Glu Val	Asp	Asp Glu	Ser Ala	Trp	Ser Ser	Val
5915			5920			5925		
Leu Pro	Ala Leu	Ser Ala	Trp	Arg Arg	Glu Arg	Arg	Ala Gln	Ser
5930			5935			5940		

Glu Val Asp Gly Trp Arg Tyr Arg Val Ser Trp Lys Pro Leu Ala
 5945 5950 5955
 Glu Val Ser Ala Ser Gly Leu Ser Gly Ser Trp Val Val Ile Ser
 5960 5965 5970
 Pro Ala Gly Ser Val Asp Asp Ser Ala Val Val Ser Ala Leu Val
 5975 5980 5985
 Gly Arg Gly Ala Glu Val Arg Arg Val Val Val Glu Ala Gly Val
 5990 5995 6000
 Asp Arg Ser Ala Leu Ala Gly Leu Leu Ala Asp Ala Gly Ser Ala
 6005 6010 6015
 Ala Gly Val Val Ser Leu Leu Gly Leu Asp Glu Ser Glu Gly Leu
 6020 6025 6030
 Leu Gly Thr Val Gly Leu Val Gln Ala Leu Gly Asp Ala Gly Val
 6035 6040 6045
 Glu Ala Pro Leu Trp Cys Leu Thr Arg Gly Ala Val Ser Val Gly
 6050 6055 6060
 Arg Ser Asp Arg Leu Val Ser Pro Val Gln Ala Gln Val Trp Gly
 6065 6070 6075
 Leu Gly Arg Val Ala Ala Leu Glu Val Pro Glu Arg Trp Gly Gly
 6080 6085 6090
 Leu Val Asp Leu Pro Glu Val Leu Asp Glu Arg Ala Val Ala Arg
 6095 6100 6105
 Leu Val Gly Val Leu Ala Gly Ser Gly Glu Asp Gln Val Ala Val
 6110 6115 6120
 Arg Ser Ser Gly Val Phe Gly Arg Arg Leu Val Arg Ala Pro Arg
 6125 6130 6135
 Ala Glu Gly Ala Ser Ala Trp Thr Pro Thr Gly Thr Val Leu Val
 6140 6145 6150
 Thr Gly Gly Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp Leu
 6155 6160 6165
 Ala Gly Ala Gly Ala Glu Arg Leu Val Leu Thr Ser Arg Arg Gly
 6170 6175 6180
 Pro Asp Ala Pro Gly Ala Ala Glu Leu Val Glu Glu Leu Thr Thr
 6185 6190 6195
 Gly Phe Gly Val Glu Val Ser Val Val Ala Cys Asp Ala Ala Asp
 6200 6205 6210
 Arg Asp Ala Leu Arg Thr Leu Leu Ser Ala Glu Ala Gly Thr Leu
 6215 6220 6225
 Thr Ala Val Ile His Thr Ala Gly Val Leu Asp Asp Gly Val Leu
 6230 6235 6240
 Asp Ala Leu Thr Pro Asp Arg Ile Asp Ser Val Leu Arg Ala Lys
 6245 6250 6255

Ala Val	Ser Ala	Phe Asn	Leu	His Glu	Leu Thr	Ala	Glu Leu	Gly
6260			6265			6270		
Ile Glu	Leu Ser	Ala Phe	Val	Leu Phe	Ser Ser	Met	Ser Gly	Thr
6275			6280			6285		
Val Gly	Ala Ala	Gly Gln	Ala	Asn Tyr	Ala Ala	Ala	Asn Ala	Tyr
6290			6295			6300		
Leu Asp	Ala Leu	Ala Glu	Gln	Arg Arg	Ala Asp	Gly	Leu Ala	Ala
6305			6310			6315		
Thr Ser	Leu Ala	Trp Gly	Pro	Trp Ala	Glu Gly	Gly	Met Ala	Gly
6320			6325			6330		
Asp Asp	Ala Met	Asp Ala	Arg	Met Arg	Arg Glu	Gly	Leu Pro	Pro
6335			6340			6345		
Met Ala	Pro Asp	Ala Ala	Leu	Thr Leu	Leu Arg	Gln	Ser Val	Gly
6350			6355			6360		
Ser Ala	Asp Ala	Ala Leu	Met	Val Val	Asp Val	Glu	Trp Gln	Arg
6365			6370			6375		
Phe Ala	Pro Ala	Leu Thr	Val	Val Arg	Pro Ser	Asn	Leu Leu	Ala
6380			6385			6390		
Glu Leu	Pro Glu	Ala Arg	Pro	Ala Gly	Thr Asp	Ser	Arg Thr	Gly
6395			6400			6405		
Gly Ala	Thr Ser	Ser Ser	Glu Gly	Ala Gly	Ser Phe	Ala	Glu Arg	Leu
6410			6415			6420		
Ala Ala	Leu Gly	Gly Ala	Glu	Gln Asp	Lys Glu	Leu	Leu Asn	Leu
6425			6430			6435		
Val Arg	Thr His	Ile Ala	Ala	Val Leu	Gly His	Gly	Gly Ser	Glu
6440			6445			6450		
Ala Val	Gly Ala	Glu Arg	Ala	Phe Lys	Glu Leu	Gly	Phe Asp	Ser
6455			6460			6465		
Leu Thr	Ala Val	Glu Leu	Arg	Asn Arg	Leu Gly	Ala	Ala Thr	Gly
6470			6475			6480		
Val Arg	Leu Pro	Ala Thr	Leu	Ile Phe	Asp Tyr	Pro	Thr Ala	Thr
6485			6490			6495		
Ala Leu	Ala Ala	Tyr Leu	Arg	Gly Glu	Leu Leu	Gly	Thr Gln	Val
6500			6505			6510		
Val Val	Ser Gly	Pro Val	Ser	Asn Gly	Val Val	Val	Asp Asp	Asp
6515			6520			6525		
Pro Ile	Ala Ile	Val Ala	Met	Ser Cys	Arg Phe	Pro	Gly Gly	Val
6530			6535			6540		
Arg Thr	Pro Glu	Asp Leu	Trp	Arg Leu	Leu Ser	Thr	Gly Gly	Asp
6545			6550			6555		
Ala Ile	Gly Glu	Phe Pro	Ala	Asp Arg	Gly Trp	Asp	Leu Ser	Arg
6560			6565			6570		

Leu Tyr	Ser Pro Asp Pro Asp	Lys Gln Gly Thr Phe	Tyr Ala Arg
6575	6580	6585	
Ala Gly	Gly Phe Leu Tyr Asp	Ala Ala Asp Phe Asp	Ala Asp Phe
6590	6595	6600	
Phe Gly	Ile Ser Pro Arg Glu	Ala Leu Ala Met Asp	Pro Gln Gln
6605	6610	6615	
Arg Leu	Leu Leu Glu Thr Ser	Trp Glu Ala Phe Glu	Arg Ala Gly
6620	6625	6630	
Ile Asp	Pro Ser Ser Leu Arg	Gly Ser Gln Ala Gly	Val Phe Val
6635	6640	6645	
Gly Thr	Asn Gly Gln Asp Tyr	Gly Ala Met Leu Gln	Thr Ile Pro
6650	6655	6660	
Asp Gly	Ile Glu Gly Phe Leu	Gly Thr Gly Asn Ala	Ala Ser Val
6665	6670	6675	
Val Ser	Gly Arg Leu Ser Tyr	Ala Phe Gly Leu Glu	Gly Pro Ala
6680	6685	6690	
Val Thr	Val Asp Thr Ala Cys	Ser Ala Ser Leu Val	Ala Leu His
6695	6700	6705	
Trp Ala	Val Gln Ala Leu Arg	Ser Gly Glu Cys Ser	Leu Ala Leu
6710	6715	6720	
Ala Gly	Gly Val Thr Val Met	Ser Ser Pro Gly Ala	Tyr Ile Asp
6725	6730	6735	
Phe Ser	Arg Gln Arg Gly Leu	Ala Glu Asp Gly Arg	Ile Lys Ala
6740	6745	6750	
Phe Ala	Ala Ala Ala Asp Gly	Thr Gly Trp Gly Glu	Gly Val Gly
6755	6760	6765	
Met Leu	Leu Val Glu Arg Leu	Ser Asp Ala Arg Arg	Asn Gly His
6770	6775	6780	
Pro Val	Leu Ala Leu Val Arg	Gly Ser Ala Ile Asn	Gln Asp Gly
6785	6790	6795	
Ala Ser	Asn Gly Leu Thr Ala	Pro Asn Gly Pro Ser	Gln Gln Arg
6800	6805	6810	
Val Ile	Arg Gln Ala Leu Ala	Asn Ala Gly Leu Ser	Ala Ala Glu
6815	6820	6825	
Val Asp	Ala Val Glu Ala His	Gly Thr Gly Thr Arg	Leu Gly Asp
6830	6835	6840	
Pro Ile	Glu Val Gln Ala Leu	Leu Ala Thr Tyr Gly	Arg Glu Arg
6845	6850	6855	
Glu Ala	Asp Gln Pro Leu Trp	Leu Gly Ser Ile Lys	Ser Asn Ile
6860	6865	6870	
Gly His	Thr Gln Ala Ala Ala	Gly Val Ala Gly Val	Ile Lys Met
6875	6880	6885	

Val Leu	Ala Met	Glu His	Gly	Val Leu	Pro Gln	Thr	Leu His	Val
6890			6895				6900	
Asp Glu	Pro Thr	Pro His	Val	Asp Trp	Ser Ala	Gly	Asp Val	Ala
6905			6910				6915	
Leu Leu	Thr Asp	Ala Val	Glu	Trp Pro	Glu Thr	Gly	Arg Pro	Arg
6920			6925				6930	
Arg Ala	Gly Val	Ser Ser	Phe	Gly Phe	Ser Gly	Thr	Asn Ala	His
6935			6940				6945	
Thr Val	Leu Glu	Gln Ala	Pro	Lys Pro	Glu Glu	Pro	Glu Glu	Ser
6950			6955				6960	
Gln Gln	Pro Glu	Glu Thr	Asn	Ala Pro	Ala Arg	Pro	His Gln	Ser
6965			6970				6975	
Gly Val	Met Pro	Trp Thr	Leu	Ser Ala	Lys Ser	Glu	Ala Ala	Leu
6980			6985				6990	
Arg Val	Gln Ala	Glu Arg	Leu	Arg Thr	Arg Ile	Ala	Ser Asp	Pro
6995			7000				7005	
Leu Leu	Gln Pro	Val Asp	Val	Ala Tyr	Ser Leu	Ala	Thr Ser	Arg
7010			7015				7020	
Ala Ala	Leu Glu	Arg Arg	Ala	Val Val	Val Ala	Thr	Glu Arg	Asp
7025			7030				7035	
Glu Phe	Leu Ala	Gly Leu	Lys	Ala Leu	Ala Ser	Gly	Gln Pro	Ala
7040			7045				7050	
Pro Gly	Leu Val	Gln Gly	Arg	Val Thr	Glu Gly	Gly	Leu Ala	Phe
7055			7060				7065	
Leu Phe	Thr Gly	Gln Gly	Ser	Gln Arg	Leu Gly	Met	Gly Arg	Glu
7070			7075				7080	
Leu Tyr	Glu Thr	Tyr Pro	Val	Phe Ala	Asp Ala	Leu	Asp Ala	Val
7085			7090				7095	
Cys Val	Arg Leu	Glu Leu	Pro	Leu Met	Asp Val	Leu	Phe Gly	Thr
7100			7105				7110	
Glu Arg	Asp Ala	Leu Asp	Glu	Thr Gly	Tyr Thr	Gln	Pro Ala	Leu
7115			7120				7125	
Phe Ala	Val Glu	Val Ala	Leu	Phe Arg	Leu Val	Glu	Ser Trp	Gly
7130			7135				7140	
Val Arg	Pro Asp	Phe Leu	Ala	Gly His	Ser Ile	Gly	Glu Ile	Ala
7145			7150				7155	
Ala Ala	His Val	Ala Gly	Val	Phe Ser	Leu Asp	Asp	Ala Cys	Ala
7160			7165				7170	
Leu Val	Glu Ala	Arg Gly	Arg	Leu Met	Gln Ala	Leu	Pro Thr	Gly
7175			7180				7185	
Gly Val	Met Ile	Ala Val	Gln	Ala Ser	Glu Ala	Glu	Val Leu	Pro
7190			7195				7200	

Leu	Leu	Thr	Glu	Arg	Val	Ser	Ile	Ala	Ala	Ile	Asn	Gly	Pro	Gln
7205						7210					7215			
Ser	Val	Val	Ile	Ala	Gly	Asp	Glu	Ala	Asp	Ala	Val	Ala	Leu	Val
7220						7225					7230			
Glu	Ser	Phe	Thr	Gly	Arg	Lys	Ser	Lys	Arg	Leu	Thr	Val	Ser	His
7235						7240					7245			
Ala	Phe	His	Ser	Pro	His	Met	Asp	Gly	Met	Leu	Ala	Asp	Phe	Arg
7250						7255					7260			
Lys	Val	Ala	Glu	Gly	Leu	Ser	Tyr	Glu	Ala	Pro	Arg	Ile	Pro	Val
7265						7270					7275			
Val	Ser	Asn	Leu	Thr	Gly	Ala	Leu	Val	Thr	Asp	Glu	Met	Gly	Ser
7280						7285					7290			
Ala	Asp	Phe	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu
7295						7300					7305			
Asp	Gly	Thr	Arg	Thr	Leu	Glu	Ala	Leu	Gly	Val	Thr	Thr	Tyr	Val
7310						7315					7320			
Glu	Leu	Gly	Pro	Asp	Gly	Val	Leu	Ser	Ala	Met	Ala	Gln	Glu	Cys
7325						7330					7335			
Val	Thr	Gly	Glu	Asp	Ser	Val	Phe	Val	Pro	Val	Leu	Arg	Ser	Gly
7340						7345					7350			
Arg	Pro	Glu	Ala	Glu	Ser	Val	Thr	Thr	Ala	Leu	Ala	Gln	Val	His
7355						7360					7365			
Val	Arg	Gly	Ile	Ala	Val	Asp	Trp	Gln	Ala	Tyr	Phe	Ala	Gly	Thr
7370						7375					7380			
Gly	Ala	Gln	Arg	Val	Asp	Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Arg
7385						7390					7395			
Arg	Tyr	Trp	Leu	Glu	Glu	Ala	Pro	Ala	Thr	Ala	Ala	Val	Glu	Pro
7400						7405					7410			
Leu	Thr	Gly	Ser	Leu	Gly	Ala	Val	Asp	Ala	Gln	Phe	Trp	Ala	Ala
7415						7420					7425			
Val	Asp	Asn	Ala	Asp	Leu	Ser	Ala	Leu	Thr	Ala	Thr	Leu	Asp	Ile
7430						7435					7440			
Asp	Val	Asp	Ala	Asp	Gln	Pro	Leu	Ser	Ala	Leu	Leu	Pro	Ala	Leu
7445						7450					7455			
Ser	Ala	Trp	Arg	Arg	Gln	Arg	Gln	Glu	Gln	Ser	Val	Val	Asp	Gly
7460						7465					7470			
Trp	Arg	Tyr	Thr	Val	Thr	Trp	Lys	Pro	Met	Ala	Asp	Pro	Ala	Val
7475						7480					7485			
Ala	Arg	Pro	Thr	Gly	Thr	Trp	Leu	Val	Val	Thr	Pro	Ala	Thr	Ser
7490						7495					7500			
Leu	Val	Asp	Leu	Pro	Ala	Val	Ser	Ala	Ala	Leu	Ala	Ala	Gln	Gly
7505						7510					7515			

Val Asp 7520	Val Arg	Glu Val	Ala 7525	Leu Glu	Ala Ala	Glu 7530	Leu Asp	Arg
Asp Gly 7535	Val Ala	Gly Arg	Met 7540	Arg Glu	Ala Leu	Ala 7545	Gly Asp	Arg
Ala Asp 7550	Gly Val	Leu Ser	Leu 7555	Leu Ala	Leu Ala	Glu 7560	His Pro	His
Pro Ala 7565	His Pro	Ala Ala	Pro 7570	Thr Gly	Leu Leu	Leu 7575	Thr Gly	Thr
Leu Val 7580	Gln Ala	Leu Gly	Asp 7585	Ala Gly	Val Asp	Ala 7590	Pro Leu	Trp
Cys Leu 7595	Thr Thr	Gly Ala	Val 7600	Ala Thr	Ala Pro	Ser 7605	Asp Leu	Ile
Gly Ser 7610	Ala Ala	Gln Ala	Gln 7615	Val Trp	Gly Leu	Gly 7620	Arg Val	Val
Ala Leu 7625	Glu His	Pro Glu	Arg 7630	Trp Gly	Gly Leu	Val 7635	Asp Leu	Pro
Val Pro 7640	Ala Asp	Glu Arg	Ala 7645	Leu Asp	Arg Leu	Leu 7650	Ala Val	Leu
Ala Gly 7655	Ala Gly	Asp Glu	Asp 7660	Gln Ile	Ala Val	Arg 7665	Ser Ala	Gly
Leu Leu 7670	Ala Arg	Arg Ile	Gly 7675	His Ala	Ala Pro	Pro 7680	Ala Ala	Gly
Gln His 7685	Ala Asp	Ser Gly	Thr 7690	Ser Gly	Ala Gly	Ala 7695	Ala Ala	Gly
Ser Ala 7700	Trp Arg	Pro Arg	Gly 7705	Thr Val	Leu Val	Thr 7710	Gly Gly	Thr
Gly Ala 7715	Leu Gly	Gly His	Val 7720	Ala Arg	Trp Leu	Ala 7725	Ala His	Gly
Ala Glu 7730	His Leu	Val Leu	Leu 7735	Ser Arg	Arg Gly	Pro 7740	Gln Ala	Pro
Gly Ala 7745	Asp Ala	Leu Val	Ala 7750	Glu Ile	Ala Ala	Leu 7755	Gly Ala	Gly
Ala Thr 7760	Ala Val	Ala Cys	Asp 7765	Val Thr	Asp Arg	Thr 7770	Ala Val	Ser
Glu Leu 7775	Leu Ala	Gly Leu	Ala 7780	Asp Gly	Thr Tyr	Gly 7785	Pro Gly	Leu
Thr Ala 7790	Val Phe	His Thr	Ala 7795	Gly Ala	Gly Gln	Phe 7800	Ala Pro	Leu
Asp Gly 7805	Thr Gly	Pro Gly	Glu 7810	Val Ala	Glu Val	Val 7815	Ala Ala	Lys
Val Ala 7820	Gly Ala	Ala His	Leu 7825	Asp Glu	Leu Leu	Gly 7830	Asp Thr	Glu

Leu Asp	Ala Phe Val Leu Phe	Ser Ser Ile Ala Gly	Val Trp Gly
7835	7840	7845	
Ser Gly	Gly Gln Ser Ala Tyr	Ala Ala Ala Asn Ala	His Leu Asp
7850	7855	7860	
Ala Leu	Ala Gln Gln Arg Arg	Ala Arg Gly Leu Thr	Ala Thr Ser
7865	7870	7875	
Val Ala	Trp Gly Pro Trp Gly	Glu Gly Gly Leu Val	Ala Asp Asp
7880	7885	7890	
Glu Ala	Ala Glu Gln Leu Arg	Arg Arg Gly Leu Pro	Val Met Ala
7895	7900	7905	
Pro Glu	Leu Ser Ile Ala Ala	Leu Gln Gln Ala Leu	Asp Gly Asp
7910	7915	7920	
Glu Thr	Ala Val Thr Val Ala	Asp Val Asp Trp Asp	Leu Phe Val
7925	7930	7935	
Pro Ala	Phe Thr Ala Ala Arg	Pro Arg Pro Leu Ile	Thr Asp Leu
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Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Gln
115 120 125

Leu Leu Glu Thr Ser Trp Glu Val Phe Glu Arg Ala Gly Ile Asp Pro
130 135 140

Ala Ala Val Arg Gly Ser Arg Thr Gly Val Tyr Val Gly Ala Gly Ala
145 150 155 160

Met Gly Tyr Gly Ala Asp Leu Lys Glu Ala Pro Glu Gly Leu Glu Gly
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Leu Leu Leu Thr Gly Gly Ala Thr Ser Val Leu Ser Gly Arg Val Ser
180 185 190

Tyr Val Phe Gly Leu Glu Gly Pro Ala Ala Thr Val Asp Thr Ala Cys
195 200 205

Ser Ser Ser Leu Val Ala Leu His Leu Ala Thr Gln Ala Leu Arg Gln
210 215 220

Arg Glu Cys Ser Leu Ala Leu Val Gly Gly Val Cys Val Met Pro Ser
225 230 235 240

Pro Asp Val Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ser Pro Asp
245 250 255

Gly Arg Cys Lys Ser Phe Ala Ala Ser Ala Asp Gly Thr Gly Trp Ser
260 265 270

Glu Gly Val Gly Val Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg
 275 280 285
 Asn Gly His Pro Val Leu Ala Val Val Arg Gly Ser Ala Val Asn Gln
 290 295 300
 Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ala Gln Gln
 305 310 315 320
 Arg Val Ile Arg Gln Ala Leu Glu Asn Ala Arg Leu Ser Ala Ala Glu
 325 330 335
 Val Asp Val Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro
 340 345 350
 Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp Arg Pro Glu
 355 360 365
 Gly Arg Pro Leu Arg Leu Gly Ser Leu Lys Ser Asn Ile Gly His Thr
 370 375 380
 Gln Ala Ala Ala Gly Val Ala Gly Ile Ile Lys Met Val Met Ala Met
 385 390 395 400
 Arg His Gly Val Leu Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro
 405 410 415
 Asn Val Asp Trp Thr Ala Gly Ala Val Ser Leu Leu Thr Glu Pro Met
 420 425 430
 Pro Trp Pro Glu Thr Gly Ala Pro Arg Arg Ala Ala Val Ser Ala Phe
 435 440 445
 Gly Val Ser Gly Thr Asn Ala His Thr Ile Ile Glu Gln Ala Pro Glu
 450 455 460
 Pro Asp Ala Glu Ser Val Ser Val Ser Gly Ser Ala Pro Ala Ala Ala
 465 470 475 480
 Pro Ala Val Pro Thr Pro Val Pro Thr Leu Val Pro Ala Val Leu Pro
 485 490 495
 Trp Thr Leu Ser Gly Arg Ser Thr Ala Ala Leu Arg Ala Gln Ala Ala
 500 505 510
 Arg Leu Leu Thr Thr Gln Gly Gln Asp Gly Ala Thr Glu Pro Gly Arg
 515 520 525
 Pro Leu Asp Ile Gly Tyr Ser Leu Ala Thr Thr Arg Ala Ala Leu Glu
 530 535 540
 His Arg Ala Val Leu Leu Gly Arg Thr Glu Asp Asp Phe Ala Ala Ala
 545 550 555 560
 Leu Ser Ala Leu Ala Glu Gly Ala Glu Ser Ala Gly Leu Val Gln Gly
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 Arg Val Thr Glu Gly Gly Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser
 580 585 590
 Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Ala Tyr Pro Val Phe
 595 600 605

Ala Asp Ala Leu Asp Ala Val Cys Ala Arg Leu Glu Leu Pro Leu Lys
610 615 620

Asp Val Leu Phe Gly Ala Asp Ala Gly Leu Leu Asp Glu Thr Ala Tyr
625 630 635 640

Thr Gln Pro Ala Leu Phe Ala Val Glu Val Ala Leu Phe Arg Leu Val
645 650 655

Glu Ser Trp Gly Val Lys Pro Asp Phe Val Ala Gly His Ser Ile Gly
660 665 670

Glu Ile Ala Ala Ala His Val Ala Gly Val Phe Ser Leu Glu Asp Ala
675 680 685

Cys Ala Leu Val Ser Ala Arg Gly Arg Leu Met Gly Ala Leu Pro Ala
690 695 700

Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Ala Glu Val Leu Pro
705 710 715 720

Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile Asn Gly Pro Gln Ser
725 730 735

Val Val Ile Ala Gly Asp Glu Ala Asp Ala Val Ala Ile Ala Gly Ser
740 745 750

Phe Ala Asp Arg Lys Ser Lys Arg Leu Thr Val Ser His Ala Phe His
755 760 765

Ser Pro His Met Asp Gly Met Leu Glu Asp Phe Arg Leu Val Ala Glu
770 775 780

Gly Leu Ser Tyr Glu Ala Pro Arg Ile Pro Val Val Ser Asn Leu Thr
785 790 795 800

Gly Ala Leu Val Ser Asp Glu Met Gly Ser Ala Glu Phe Trp Val Arg
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His Val Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr Leu Glu
820 825 830

Ala Ala Gly Val Thr Lys Tyr Val Glu Leu Gly Pro Asp Gly Val Leu
835 840 845

Ser Ala Met Ala Gln Asp Cys Val Ser Gly Glu Gly Ser Val Phe Ile
850 855 860

Pro Val Leu Arg Lys Ala Arg Pro Glu Ala Glu Ser Val Thr Thr Ala
865 870 875 880

Leu Ala Thr Ala His Val His Gly Ile Pro Val Asp Trp Gln Ala Phe
885 890 895

Tyr Ala Gly Thr Gly Ala Gln Arg Val Asp Leu Pro Thr Tyr Ala Phe
900 905 910

Gln His Glu Arg Tyr Trp Leu Glu Pro Ala Thr Gly Gly Ala Gly Asp
915 920 925

Val Ser Gly Ala Gly Leu Asp Pro Ala Gly His Pro Leu Leu Gly Ala
930 935 940

Ala Val Thr Leu Ala Gly Ser Asp Ser Val Leu Phe Thr Gly Arg Leu
945 950 955 960

Ser Leu Arg Thr Gln Pro Trp Leu Ala Asp His Thr Val Ser Gly Thr
965 970 975

Thr Val Leu Pro Gly Ala Ala Phe Val Glu Leu Ala Val Arg Ala Gly
980 985 990

Asp Gln Ala Gly Cys Glu Arg Val Glu Ala Leu Val Leu Asp Ala Pro
995 1000 1005

Leu Ala Leu Pro Ala Glu Gly Ala Val Arg Val Gln Val Leu Val
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Glu Ala Pro Asp Glu Gln Gly Arg Arg Pro Phe Thr Val Ser Ser
1025 1030 1035

Gln Pro Glu Thr Ala Pro Ala Asp Thr Pro Trp Gly Arg His Ala
1040 1045 1050

Arg Gly Val Leu Ala Pro Thr Ala Pro Ala Pro Ser Phe Asp Leu
1055 1060 1065

Ala Gln Trp Pro Pro Ala Gly Ala Glu Ala Val Asp Ile Thr Asp
1070 1075 1080

Leu Tyr Ala Ser His Asp Thr Pro Gly Ala His Gly Pro Glu Arg
1085 1090 1095

Gly Gly Leu Phe Arg Ala Val Glu Ala Val Trp Arg Cys Asp Gly
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Asp Leu Phe Ala Glu Val Arg Leu Pro Glu Gly Gly Pro Asp Ala
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Gln Ala Phe Gly Leu His Pro Ala Leu Leu Asp Ala Ala Ala His
1130 1135 1140

Ala Ala Ser Val Leu Asp Glu Gln His Gly Thr Gly Ala Gly Leu
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Gly Thr Trp Ser Asp Val Thr Leu His Ala Val Gly Ala Gly Ala
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Leu Arg Val Arg Ile Arg Ser Ala Leu Asp Gly Thr Val Gly Leu
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Asp Leu Ala Asp Asp Leu Gly Glu Pro Val Ala Thr Val Gly Gly
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Leu Thr Pro Arg Pro Phe Ala Gln Ala Gly Ser Gly Gly Gln Val
1205 1210 1215

Val Gln His Asp Ala Leu Phe Gln Leu Asp Trp Val Arg Leu Pro
1220 1225 1230

Leu Ala Asp Arg Ser Ser Ala Pro Thr Gly Glu Trp Ala Val Leu
1235 1240 1245

Gly Ser Ala Asp Gly Phe Ala Asp Leu Glu Ala Leu Gly Ala Ala
1250 1255 1260

Val Asp	Ala Gly	Ala Pro	Val	Pro Pro	Tyr Val	Val	Val Pro	Leu
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Glu Arg	Gln Ala	Thr Gly	Asn	Gly Ser	Asp Ala	Leu	His Glu	Ala
1280			1285			1290		
Val His	Arg Ala	Leu Ala	Leu	Val Arg	Ser Trp	Leu	Asp Asp	Gln
1295			1300			1305		
Arg Phe	Glu Thr	Ser Arg	Leu	Val Val	Leu Thr	Arg	Gly Ala	Val
1310			1315			1320		
Ala Gly	Pro Gly	Glu Gly	Val	Glu Asp	Leu Pro	His	Ala Ala	Val
1325			1330			1335		
Trp Gly	Leu Val	Arg Ser	Ala	Glu Thr	Glu Asn	Pro	Gly Arg	Phe
1340			1345			1350		
Val Leu	Ala Asp	Val Asp	Val	Asp Leu	Asp Ala	Asp	Leu Gly	Ser
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Gly Val	Gly Leu	Ala Ala	Val	Leu Ala	Ser Gly	Glu	Pro Glu	Leu
1370			1375			1380		
Leu Leu	Arg Asp	Gly Val	Val	His Ala	Pro Arg	Leu	Asn Arg	Ala
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Arg Thr	Ala Thr	Ser Ser	Asp	Ala Pro	Gly Ile	Asp	Pro Ala	Gly
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Thr Val	Leu Ile	Thr Gly	Gly	Ser Gly	Thr Leu	Ala	Gly Ile	Val
1415			1420			1425		
Ala Arg	His Leu	Ala Thr	Ala	His Gly	Val Arg	Arg	Leu Leu	Leu
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Leu Ser	Arg Arg	Gly Ala	Asp	Ala Pro	Gly Ala	Gly	Glu Leu	Thr
1445			1450			1455		
Ala Glu	Leu Ala	Gly Leu	Gly	Ala Gln	Val Ser	Trp	Ala Ala	Cys
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Asp Ala	Gly Asp	Arg Asp	Ala	Leu Ala	Ala Val	Leu	Ala Ala	Val
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Pro Ala	Ala His	Pro Leu	Thr	Ala Val	Val His	Thr	Ala Gly	Val
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Leu Asp	Asp Gly	Val Ile	Gly	Ser Leu	Thr Pro	Glu	Arg Leu	Asp
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Thr Val	Leu Arg	Pro Lys	Ala	Asp Ala	Ala Leu	His	Leu His	Glu
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Leu Thr	Arg Asp	Leu Pro	Leu	Thr Ala	Phe Val	Leu	Phe Ser	Ala
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Ile Ala	Gly Thr	Leu Gly	Ser	Ala Gly	Gln Ala	Asn	Tyr Ala	Ala
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Ala Asn	Val Phe	Leu Asp	Ala	Leu Ala	Gln His	Arg	His Asp	Gln
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Glu	Gln	His	Gly	Met	Gly	Thr	Leu	Ser	Ala	Thr	Asp	Gly	Met	Ala
1610						1615					1620			
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Tyr	Pro	Gly	Gly	Val	Arg	Thr	Pro	Glu	Glu	Leu	Trp	Arg	Leu	Val
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Glu	Thr	Gly	Gly	Asp	Ala	Ile	Ala	Gly	Leu	Pro	Gly	Asn	Arg	Gly
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Trp	Asp	Thr	Asp	Ala	Leu	His	Ala	Asp	Glu	Asp	Gly	Arg	Thr	Phe
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Ala	Gly	Gly	Phe	Leu	Tyr	Asp	Ala	Asp	Ser	Phe	Asp	Ala	Asp	Phe
1850						1855					1860			
Phe	Gly	Ile	Ser	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln
1865						1870					1875			
Arg	Leu	Leu	Leu	Glu	Thr	Ser	Trp	Glu	Ala	Ile	Glu	Arg	Ala	Gly
1880						1885					1890			

Ile Asp	Pro Ser Ser Leu Arg	Gly Ser Arg Ala Gly	Val Phe Val
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Gly Ala	Ala Tyr Ser Gly Tyr	Asp Ala Gln Leu Glu	Gln Ser Gly
1910	1915	1920	
Val Asp	Gly Val Leu Gly His	Val Met Thr Gly Asn	Ala Gly Ser
1925	1930	1935	
Val Met	Ser Gly Arg Val Ser	Tyr Ala Leu Gly Leu	Glu Gly Pro
1940	1945	1950	
Ala Val	Thr Val Asp Thr Ala	Cys Ser Ser Ser Leu	Val Ala Leu
1955	1960	1965	
His Trp	Ala Ile Gln Ala Leu	Arg Asn Gly Glu Cys	Ser Leu Ala
1970	1975	1980	
Leu Ala	Gly Gly Val Thr Val	Met Ser Thr Pro Gly	Thr Phe Ser
1985	1990	1995	
Glu Phe	Ser Gln Gln Gly Gly	Leu Ser Pro Asp Gly	Arg Cys Lys
2000	2005	2010	
Ala Phe	Ala Ser Ala Ala Asp	Gly Thr Gly Trp Gly	Glu Gly Val
2015	2020	2025	
Gly Met	Leu Leu Val Glu Arg	Leu Ser Asp Ala Arg	Arg Asn Gly
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His Pro	Val Leu Ala Val Val	Arg Gly Ser Ala Val	Asn Gln Asp
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Gly Ala	Ser Asn Gly Leu Thr	Ala Pro Asn Gly Pro	Ser Gln Gln
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Arg Val	Ile Arg Ala Ala Leu	Ala Ser Ala Gly Leu	Ser Ala Ala
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Asp Val	Asp Val Val Glu Ala	His Gly Thr Gly Thr	Lys Leu Gly
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Asp Pro	Ile Glu Ala Gln Ala	Leu Leu Ala Thr Tyr	Gly Gln Asp
2105	2110	2115	
Arg Pro	Asp Gly Arg Pro Leu	Trp Leu Gly Ser Ile	Lys Ser Asn
2120	2125	2130	
Ile Gly	His Thr Gln Ala Ala	Ala Gly Val Ala Gly	Ile Ile Lys
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Met Val	Met Ala Met Arg His	Gly Val Leu Pro Arg	Thr Leu His
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Val Asp	Glu Pro Thr Ser His	Val Asp Trp Ser Ala	Gly Glu Val
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Ser Leu	Leu Ser Glu Ser Ala	Glu Trp Pro Leu Thr	Glu Arg Pro
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Arg Arg	Ala Gly Val Ser Ser	Phe Gly Ile Ser Gly	Thr Asn Ala
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His Thr Ile Ile Glu Gln Ala Pro Glu Thr Gly Thr Glu Ala Glu
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 Pro Ser Ala Glu Thr Leu Thr His Gly Thr Val Pro Tyr Val Leu
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 2240 2245 2250
 Leu Ala Val Val Glu Ala Ala Glu Ser Pro Arg Val Ala Asp Leu
 2255 2260 2265
 Ala Tyr Ser Leu Ala Thr Ser Arg Ala Gly Leu Asp His Arg Ala
 2270 2275 2280
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 2345 2350 2355
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Gln Ala Val Asp Ala Arg Phe	Trp Asp Ala Val Glu Arg Ala Asp
2675	2680 2685
Leu Gly Ser Leu Ile Gly Gly	Pro Glu Ile Asp Gly Asp Gln Pro
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Leu Ser Ser Val Leu Pro Ala	Leu Ser Asp Trp Arg Arg Asn Gln
2705	2710 2715
Gln Ala Gln Ser Gln Ala Asp	Ala Arg Leu Tyr Arg Ile Ala Trp
2720	2725 2730
Gln Pro Trp Ser Gly Ala Gly	Arg Gly Thr Pro Ala Gly Thr Trp
2735	2740 2745
Leu Val Ala Val Pro Ala Pro	Tyr Ala Asp Asp Pro Trp Val Arg
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Ala Leu Thr Asp Arg Met Ala	Glu Gly Gly Ala Glu Val Val Pro
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Gln Ala Gln Val Trp Gly Leu	Gly Arg Val Val Ala	Leu Glu His
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Pro Asp Arg Trp Gly Gly Leu	Val Asp Leu Pro Ala	Val Cys Asp
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Thr Pro Arg Gly Thr Val Leu	Val Thr Gly Gly Thr	Gly Ala Leu
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3035	3040	3045
Ala Ala Gly Val Ser Gln Pro	Pro Gly Thr Gly Thr	Asp Leu Pro
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Gly Phe Ala Arg Val Val Ala	Ala Lys Thr Ala Gly	Ala Val His
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Leu Asp Ala Leu Phe Asp Ala	Pro Asp Ser Leu Asp	Ala Phe Val
3080	3085	3090
Leu Phe Ser Ser Ile Ala Gly	Val Trp Gly Ser Gly	Gly Gln Gly
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Ala Tyr Ser Ala Ala Asn Thr	Phe Leu Asp Thr Leu	Ala Glu Arg
3110	3115	3120
Arg Arg Ala Arg Gly Leu Ala	Ala Thr Ala Ile Ala	Trp Gly Pro
3125	3130	3135
Trp Ala Asp Gly Gly Met Ala	Thr Glu Gly Asp Ala	Glu Glu Gln
3140	3145	3150

Leu Ser Arg Arg Gly Leu Pro Pro Met Asp Arg Ala Thr Asn Leu
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Gly Gly Phe Leu His Glu Ala Ala Asp Phe Asp Pro Ala Phe Gly
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Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu
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 1310 1315 1320
 Val Gln Thr Trp Phe Gly Glu Glu Pro Phe Ala Gly Asp Arg Phe
 1325 1330 1335
 Ala Ala Thr Arg Leu Val Val Leu Thr Arg Gly Ala Val Ala Ala
 1340 1345 1350
 Gly Asp Gly Asp Thr Val Thr Asp Pro Ala His Ala Ala Val Trp
 1355 1360 1365
 Gly Leu Leu Arg Ser Ala Gln Ser Glu Tyr Pro Asp Arg Leu Leu
 1370 1375 1380
 Leu Ile Asp Thr Asp Gly Val Glu Asp Ser Val His Ala Leu Pro
 1385 1390 1395
 Ala Val Leu Ala Val Gly Glu Pro Gln Leu Ala Leu Arg Ala Gly
 1400 1405 1410
 Ser Val His Ala Leu Arg Leu Ala Arg Val Ala Ala Ala Thr Pro
 1415 1420 1425
 Glu Asp Ala Ala Ala Pro Thr Gln Tyr Ala Pro Gly Ser Thr Val
 1430 1435 1440
 Leu Ile Thr Gly Ala Gly Gly Met Leu Gly Gly Leu Ile Ala Arg
 1445 1450 1455

Arg Leu	Val Ala	Glu His	Gly	Val Arg	His Leu	Leu	Leu	Val Gly
1460			1465			1470		
Arg Arg	Gly Ala	Ala Ala	Pro	Gly Ala	Glu Gln	Leu	Ser Ala	Glu
1475			1480			1485		
Leu Ala	Glu Ala	Gly Ala	Ser	Val Thr	Trp Ala	Ala	Cys Asp	Val
1490			1495			1500		
Ala Asp	Arg Asp	Ala Leu	Ser	Ala Val	Leu His	Ala	Ile Pro	Ala
1505			1510			1515		
Glu His	Pro Leu	Gly Ala	Val	Val His	Thr Ala	Gly	Val Leu	Asp
1520			1525			1530		
Asp Gly	Val Ile	Ala Ser	Leu	Thr Pro	Glu Arg	Leu	Ser Ala	Val
1535			1540			1545		
Leu Arg	Pro Lys	Val Asp	Ala	Ala Cys	Asn Leu	His	Glu Leu	Thr
1550			1555			1560		
Arg His	Leu Asp	Leu Thr	Ala	Phe Val	Leu Phe	Ser	Ser Ile	Gly
1565			1570			1575		
Gly Val	Phe Gly	Gly Pro	Gly	Gln Gly	Asn Tyr	Ala	Ala Ala	Asn
1580			1585			1590		
Val Phe	Leu Asp	Ala Leu	Ala	Gln His	Arg Arg	Ser	Gln Gly	Leu
1595			1600			1605		
Ala Ala	Thr Ser	Leu Ala	Trp	Ala Leu	Trp Ala	Asp	Ser Thr	Gly
1610			1615			1620		
Met Ala	Gly Ser	Leu Asp	Glu	Ala Asp	Ile Ser	Arg	Met Arg	Arg
1625			1630			1635		
Gly Gly	Leu Pro	Pro Leu	Thr	Thr Ala	Glu Gly	Leu	Glu Leu	Phe
1640			1645			1650		
Asp Leu	Ala His	Arg Ile	Asp	Glu Ala	Ala Pro	Val	Leu Met	Arg
1655			1660			1665		
Ala Asp	Leu Thr	Ala Leu	Arg	Thr Gln	Ala Gln	Ala	Gly Thr	Met
1670			1675			1680		
Ser Pro	Leu Leu	Arg Gly	Leu	Val Arg	Val Pro	Ala	Arg Arg	Ser
1685			1690			1695		
Ala Ser	Gly Ala	Ala Gly	Thr	Gly Gly	Glu Ser	Gly	Leu Arg	Glu
1700			1705			1710		
Arg Leu	Ala Gly	Leu Ser	Ala	Ala Glu	Arg Asp	Arg	Thr Leu	Leu
1715			1720			1725		
Asp Leu	Val Arg	Lys Gln	Val	Ala Ala	Ala Leu	Gly	Tyr Pro	Gly
1730			1735			1740		
Pro Ser	Ala Val	Glu Pro	Gly	Arg Ser	Phe Lys	Glu	Leu Gly	Phe
1745			1750			1755		
Asp Ser	Leu Thr	Ala Val	Glu	Leu Arg	Asn Leu	Leu	Gly Asp	Ala
1760			1765			1770		

Thr Gly 1775	Arg Arg	Leu Pro	Ala 1780	Thr Leu Val Phe Asp 1785	Tyr Pro Thr
Ala Thr 1790	Ala Leu Ala Gly Tyr	Leu Arg Glu Glu Ile	1795	1800	Ile Gly Asp
Leu Ala 1805	Asp Ala Val Thr	Ala 1810	Pro Ala Leu Val Pro	1815	Ser Ala Ala
Val Ala 1820	Gly Ala Gly Ala Gly	Ala Asp Asp Asp Asp	1825	1830	Pro Ile Ala
Ile Val 1835	Ala Met Ser Cys Arg	Phe Pro Gly Gly Ile	1840	1845	Ala Ser Pro
Glu Asp 1850	Leu Trp Gln Leu Leu	Val Thr Gly Arg Asp	1855	1860	Gly Ile Thr
Gly Phe 1865	Pro Ala Asp Arg Gly	Trp Asp Leu Asp Ser	1870	1875	Leu Tyr Ser
Asp Asp 1880	Pro Asp Arg Glu Gly	Thr Ser Tyr Ala Arg	1885	1890	Glu Gly Gly
Phe Leu 1895	His Glu Ala Ala Glu	Phe Asp Ala Ser Phe	1900	1905	Phe Gly Ile
Ser Pro 1910	Arg Glu Ala Leu Ala	Met Asp Pro Gln Gln	1915	1920	Arg Leu Leu
Leu Glu 1925	Thr Thr Trp Glu Thr	Phe Glu Arg Ala Gly	1930	1935	Ile Asp Pro
Thr Ser 1940	Leu Arg Gly Ser Arg	Thr Gly Val Phe Val	1945	1950	Gly Ser Asn
Ala Gln 1955	Asp Tyr Leu Gln Leu	Trp Leu Asn Asp Ala	1960	1965	Asp Gly Leu
Glu Gly 1970	His Leu Gly Thr Gly	Asn Ala Ala Ser Val	1975	1980	Val Ser Gly
Arg Leu 1985	Ser Tyr Thr Phe Gly	Leu Glu Gly Pro Ala	1990	1995	Val Thr Val
Asp Thr 2000	Ala Cys Ser Ser Ser	Leu Val Thr Leu His	2005	2010	Leu Ala Ala
Gln Ala 2015	Leu Arg Arg Gly Glu	Cys Ser Met Ala Leu	2020	2025	Ala Gly Ala
Val Thr 2030	Ile Met Ser Thr Pro	Gly Ala Phe Thr Glu	2035	2040	Phe Ser Arg
Gln Arg 2045	Gly Leu Ala Ala Asp	Gly Arg Ile Lys Ala	2050	2055	Phe Ala Ala
Ala Ala 2060	Asp Gly Thr Ser Trp	Ser Glu Gly Val Gly	2065	2070	Leu Leu Leu
Val Glu 2075	Arg Leu Ser Asp Ala	Arg Arg Asn Gly His	2080	2085	Pro Val Leu

Ala Val Val Arg Gly Thr Ala Val Asn Gln Asp Gly Ala Ser Asn
 2090 2095 2100
 Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg
 2105 2110 2115
 Glu Ala Leu Ala Asp Ala Gly Leu Ser Ala Ala Glu Val Asp Ala
 2120 2125 2130
 Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
 2135 2140 2145
 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Gly Arg Pro Asp Asp
 2150 2155 2160
 Gln Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Ile Gly His Thr
 2165 2170 2175
 Gln Ala Val Ala Gly Ala Ala Gly Ile Ile Lys Met Val Met Ala
 2180 2185 2190
 Met Arg His Gly Val Leu Pro Gln Thr Leu His Ile Asp Glu Pro
 2195 2200 2205
 Thr Pro Tyr Val Asp Trp Ser Ala Gly Asp Ile Ala Leu Leu Thr
 2210 2215 2220
 Glu Gln Arg Ala Trp Pro Glu Thr Gly Arg Pro Arg Arg Ala Gly
 2225 2230 2235
 Val Ser Ser Phe Gly Tyr Ser Gly Thr Asn Ala His Ala Val Ile
 2240 2245 2250
 Glu Gln Ala Pro Gln Asn Ala Met Glu Arg Thr Pro Gln Gly Asp
 2255 2260 2265
 Asn Leu Pro Ala Arg Thr Pro Ala Thr Arg Thr Leu Pro Val Leu
 2270 2275 2280
 Pro Leu Leu Val Ser Gly Arg Thr Ala Pro Ala Leu Arg Ala Gln
 2285 2290 2295
 Ala Glu Arg Leu Arg Pro Ala Ala Thr Ala Leu Ala Thr Gly Thr
 2300 2305 2310
 Val Thr Asn Ser Gly Ala Leu Glu Ala Leu Asp Leu Gly Tyr Ser
 2315 2320 2325
 Leu Ala Thr Ser Arg Ala Ala Leu Glu His Arg Ala Val Leu Ile
 2330 2335 2340
 Gly Thr Pro Ser Asp Gly Gln Ala Leu Ala Ser Arg Leu Asp Ala
 2345 2350 2355
 Leu Ala Ala Gly Glu Gln Val Pro Gly Leu Val Gln Gly Thr Ala
 2360 2365 2370
 Ser Gly Gly Gly Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser Gln
 2375 2380 2385
 Arg Leu Gly Met Gly Arg Glu Leu Tyr Glu Thr Tyr Pro Val Phe
 2390 2395 2400

Ala Glu Ala Leu Asp Ala Val Cys Ala Arg Leu Glu Leu Pro Leu
2405 2410 2415

Lys Glu Val Leu Phe Gly Ala Asp Gly Ala Ala Leu Asp Gln Thr
2420 2425 2430

Ala Val Thr Gln Pro Ala Leu Phe Ala Ile Glu Val Ala Leu Phe
2435 2440 2445

Arg Leu Val Glu Ser Trp Gly Leu Arg Pro Asp Phe Val Ala Gly
2450 2455 2460

His Ser Ile Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Phe
2465 2470 2475

Ser Leu Glu Asp Ala Cys Arg Leu Val Glu Ala Arg Gly Arg Leu
2480 2485 2490

Met Gln Ala Leu Pro Gly Gly Gly Val Met Ile Ala Val Gln Ala
2495 2500 2505

Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile
2510 2515 2520

Ala Ala Ile Asn Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu
2525 2530 2535

Ala Asp Ala Val Ala Ile Ala Glu Ser Phe Thr Gly Arg Lys Ser
2540 2545 2550

Lys His Leu Ala Val Ser His Ala Phe His Ser Pro His Met Asp
2555 2560 2565

Gly Met Leu Glu Asp Phe Arg Ala Val Ala Glu Gly Leu Ser Tyr
2570 2575 2580

Glu Ala Pro Arg Ile Ala Val Val Ser Asn Leu Thr Gly Ala Leu
2585 2590 2595

Val Ser Asp Glu Met Ser Ser Ala Glu Phe Trp Val Arg His Val
2600 2605 2610

Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Ala Leu Glu Ala
2615 2620 2625

Ala Gly Val Thr Thr Tyr Val Glu Leu Gly Pro Gly Gly Val Leu
2630 2635 2640

Ser Ala Leu Ala Gln Glu Cys Val Ser Gly Asp Gly Ala Ala Phe
2645 2650 2655

Val Pro Val Leu Arg Ser Gly Arg Ser Glu Ala Glu Thr Val Val
2660 2665 2670

Thr Ala Leu Ala Gln Ala His Val Arg Gly Val Glu Val Asp Trp
2675 2680 2685

Ala Ala Phe Phe Ala Gly Thr Gly Ala Glu Arg Ile Asp Leu Pro
2690 2695 2700

Thr Tyr Ala Phe Gln Arg Gln Arg Tyr Trp Pro Glu Thr Val Leu
2705 2710 2715

Ser Thr	Val Gly	Pro Val	Val	Ala Glu	Ala Val	Asp	Ala Val	Asp	
2720			2725				2730		
Ala Arg	Phe Trp	Asp Ala	Val	Glu Arg	Glu Asp	Leu	Ala Ser	Leu	
2735			2740				2745		
Val Ala	Glu Leu	Asp Val	Asp	Glu Thr	Pro Leu	Gly	Glu Val	Val	
2750			2755				2760		
Pro Ala	Leu Ser	Ala Trp	Arg	Arg Glu	Arg Arg	Ala	Gln Ser	Glu	
2765			2770				2775		
Val Asp	Gly Trp	Arg Tyr	Arg	Val Ser	Trp Lys	Pro	Leu Ala	Asp	
2780			2785				2790		
Ala Ser	Thr Ala	Arg Leu	Ser	Gly Ser	Trp Val	Val	Val Ser	Pro	
2795			2800				2805		
Asp Lys	Gly Val	Asp Asp	Ser	Ala Val	Val Ala	Gly	Leu Ala	Gly	
2810			2815				2820		
Arg Gly	Ala Glu	Val Arg	Arg	Val Val	Val Glu	Ala	Gly Val	Asp	
2825			2830				2835		
Arg Ser	Ala Leu	Ala Gly	Leu	Leu Ala	Asp Ala	Gly	Ser Ala	Ala	
2840			2845				2850		
Gly Val	Val Ser	Leu Leu	Gly	Leu Asp	Glu Ser	Glu	Gly Leu	Leu	
2855			2860				2865		
Gly Thr	Val Gly	Leu Val	Gln	Ala Leu	Gly Asp	Ala	Gly Val	Glu	
2870			2875				2880		
Ala Pro	Leu Trp	Cys Leu	Thr	Arg Gly	Ala Val	Ser	Val Gly	Arg	
2885			2890				2895		
Ser Asp	Arg Leu	Val Ser	Pro	Val Gln	Ala Gln	Val	Trp Gly	Leu	
2900			2905				2910		
Gly Arg	Val Ala	Ala Leu	Glu	Val Pro	Glu His	Trp	Gly Gly	Leu	
2915			2920				2925		
Val Asp	Leu Pro	Glu Val	Leu	Asp Glu	Arg Ala	Val	Ala Arg	Leu	
2930			2935				2940		
Val Gly	Val Leu	Ala Gly	Ser	Gly Glu	Asp Gln	Val	Ala Val	Arg	
2945			2950				2955		
Ser Ser	Gly Val	Phe Gly	Arg	Arg Leu	Val Arg	Ala	Pro Arg	Ala	
2960			2965				2970		
Glu Gly	Ala Ala	Ala Trp	Thr	Pro Thr	Gly Thr	Val	Leu Val	Thr	
2975			2980				2985		
Gly Gly	Thr Gly	Val Leu	Gly	Gly Arg	Val Ala	Arg	Trp Leu	Ala	
2990			2995				3000		
Gly Ala	Gly Ala	Glu Arg	Leu	Val Leu	Thr Ser	Arg	Arg Gly	Pro	
3005			3010				3015		
Asp Ala	Pro Gly	Ala Ala	Glu	Leu Val	Glu Glu	Leu	Thr Thr	Gly	
3020			3025				3030		

Phe Gly 3035	Val Glu Val Ser 3040	Ile Val Ala Cys Asp Ala 3045	Ala Asp Arg 3045
Asp Ala 3050	Leu Arg Ala Leu Leu 3055	Ser Ala Glu Ala Gly 3060	Thr Leu Thr 3060
Ala Val 3065	Ile His Thr Ala Gly 3070	Val Leu Asp Asp Gly 3075	Val Leu Asp 3075
Ala Leu 3080	Thr Pro Asp Arg Ile 3085	Asp Ser Val Leu Arg 3090	Ala Lys Ala 3090
Val Ser 3095	Ala Leu Asn Leu His 3100	Glu Leu Thr Ala Glu 3105	Leu Asp Ile 3105
Glu Leu 3110	Ser Ala Phe Val Leu 3115	Phe Ser Ser Met Ser 3120	Gly Thr Val 3120
Gly Ala 3125	Ala Gly Gln Ala Asn 3130	Tyr Ala Ala Ala Asn 3135	Ala Phe Leu 3135
Asp Ala 3140	Leu Ala Glu Gln Arg 3145	Arg Ala Asp Gly Leu 3150	Ala Ala Thr 3150
Ser Leu 3155	Ala Trp Gly Pro Trp 3160	Ala Glu Gly Gly Met 3165	Ala Ala Asp 3165
Ala Ala 3170	Leu Glu Ala Arg Met 3175	Arg Arg Gly Gly Val 3180	Pro Pro Met 3180
Asp Ala 3185	Glu Leu Ala Leu Ser 3190	Ala Leu Arg Gln Ala 3195	Ile Gly Ser 3195
Ala Asp 3200	Ala Ala Leu Thr Ile 3205	Val Asp Phe Asp Trp 3210	Ala Arg Phe 3210
Ala Pro 3215	Gly Phe Thr Ala Val 3220	Arg Ala Gly Asn Leu 3225	Leu Ala Glu 3225
Leu Pro 3230	Glu Ala Ala Ala Val 3235	Met Arg Gly Pro Glu 3240	Asn Ala Asp 3240
Ser Arg 3245	Pro Glu His Ala Asp 3250	Ser Ser Leu Ala Leu 3255	Arg Leu Gln 3255
Gly Met 3260	Ala Gln Ala Asp Gln 3265	Glu Pro Phe Leu Leu 3270	Glu Leu Val 3270
Arg Ala 3275	Gln Val Ala Glu Val 3280	Leu Gly His Ser Gly 3285	Ala Glu Asp 3285
Ile Glu 3290	Ala Gly Arg Ala Phe 3295	Arg Glu Ile Gly Phe 3300	Asp Ser Leu 3300
Thr Ala 3305	Val Glu Leu Arg Asn 3310	Arg Leu Gly Ala Ala 3315	Ala Glu Leu 3315
Arg Leu 3320	Pro Ala Thr Leu Val 3325	Tyr Asp Tyr Pro Thr 3330	Pro Ala Ala 3330
Leu Ala 3335	Val His Leu Arg Thr 3340	Glu Leu Leu Gly Lys 3345	Gln Val Val 3345

Val Ser Gly Pro Val Ser Lys	Val Val Asp Asp Asp	Pro Ile Ala
3350	3355	3360
Ile Val Ser Met Ser Cys Arg	Phe Pro Gly Gly Val	Arg Thr Pro
3365	3370	3375
Glu Asp Leu Trp Glu Leu Leu	Ser Thr Gly Gly Asp	Ala Ile Ser
3380	3385	3390
Asp Leu Pro Leu Asp Arg Gly	Trp Asp Ile Asp Ala	Leu Tyr Asp
3395	3400	3405
Ala Asp Pro Ser Thr Gln Gly	Thr Ser Tyr Ala Arg	Ala Gly Gly
3410	3415	3420
Phe Leu Tyr Asp Ala Ala Asp	Phe Asp Ala Asp Phe	Phe Gly Ile
3425	3430	3435
Ser Pro Arg Glu Ala Leu Ala	Met Asp Pro Gln Gln	Arg Leu Leu
3440	3445	3450
Leu Glu Thr Ser Trp Glu Ala	Phe Glu Arg Ala Gly	Ile Asp Pro
3455	3460	3465
Glu Thr Leu Arg Gly Ser Gln	Ala Gly Val Phe Val	Gly Thr Asn
3470	3475	3480
Gly Gln Asp Tyr Leu Ser Val	Leu Leu Glu Glu Pro	Glu Gly Leu
3485	3490	3495
Glu Gly His Leu Gly Thr Gly	Asn Ala Ala Ser Val	Val Ser Gly
3500	3505	3510
Arg Leu Ser Tyr Val Phe Gly	Leu Glu Gly Pro Ala	Val Thr Val
3515	3520	3525
Asp Thr Ala Cys Ser Ser Ser	Leu Val Ala Leu His	Trp Ala Ile
3530	3535	3540
Gln Ala Leu Arg Asn Gly Glu	Cys Ser Leu Ala Leu	Ala Gly Gly
3545	3550	3555
Val Thr Val Met Ser Thr Pro	Gly Thr Phe Ile Glu	Phe Ser Arg
3560	3565	3570
Gln Arg Gly Leu Ala Glu Asp	Gly Arg Ile Lys Ala	Phe Ala Ala
3575	3580	3585
Ala Ala Asp Gly Thr Gly Trp	Gly Glu Gly Val Gly	Met Leu Leu
3590	3595	3600
Val Glu Arg Leu Ser Asp Ala	Glu Arg Asn Gly His	Pro Val Leu
3605	3610	3615
Ala Ile Val Arg Gly Ser Ala	Ile Asn Gln Asp Gly	Ala Ser Asn
3620	3625	3630
Gly Leu Thr Ala Pro Asn Gly	Pro Ser Gln Gln Arg	Val Ile Arg
3635	3640	3645
Ala Ala Leu Ala Ser Ala Gly	Leu Ser Ala Ala Asp	Val Asp Ala
3650	3655	3660

Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro	Ile	Glu
3665						3670					3675			
Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Asp	Arg	Pro	Ala	Asp
3680						3685					3690			
Arg	Pro	Leu	Gln	Leu	Gly	Ser	Ile	Lys	Ser	Asn	Ile	Gly	His	Thr
3695						3700					3705			
Gln	Ala	Ala	Ala	Gly	Val	Ala	Gly	Val	Ile	Lys	Met	Val	Leu	Ala
3710						3715					3720			
Met	Glu	His	Gly	Val	Leu	Pro	Gln	Ser	Leu	His	Ile	Asp	Ala	Pro
3725						3730					3735			
Ser	Pro	Gln	Val	Asp	Trp	Glu	Ala	Gly	Asp	Ile	Ala	Leu	Leu	Thr
3740						3745					3750			
Glu	Gln	Arg	Gln	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg	Ala	Gly
3755						3760					3765			
Val	Ser	Ser	Phe	Gly	Phe	Ser	Gly	Thr	Asn	Ala	His	Thr	Ile	Ile
3770						3775					3780			
Glu	Gln	Ala	Pro	Ala	Ser	Thr	Glu	Thr	Asp	Arg	Ala	Glu	Ser	Gly
3785						3790					3795			
Ser	Val	Glu	Pro	Asp	Phe	Val	Pro	Leu	Met	Leu	Ser	Ala	Lys	Ser
3800						3805					3810			
Asp	Val	Ala	Leu	Arg	Ala	Gln	Ala	Ala	Ser	Leu	Arg	Ala	Arg	Leu
3815						3820					3825			
Ile	Ala	Ala	Pro	Asp	Met	Arg	Leu	Ser	Asp	Val	Gly	Ser	Thr	Leu
3830						3835					3840			
Thr	Thr	Gly	Arg	Ser	Ala	Phe	Glu	Arg	Arg	Ala	Ala	Leu	Val	Ala
3845						3850					3855			
Gly	Gly	Arg	Glu	Gly	Leu	Leu	Ala	Gly	Leu	Glu	Ala	Leu	Ala	Asp
3860						3865					3870			
Gly	Gly	Ser	Ala	Ala	Gly	Leu	Val	Glu	Gly	Ser	Pro	Val	Ser	Gly
3875						3880					3885			
Lys	Leu	Ala	Phe	Leu	Phe	Thr	Gly	Gln	Gly	Ser	Gln	Arg	Leu	Gly
3890						3895					3900			
Met	Gly	Arg	Glu	Leu	Tyr	Glu	Ala	Tyr	Pro	Val	Phe	Ala	Asp	Ala
3905						3910					3915			
Leu	Asp	Ala	Val	Cys	Val	Arg	Leu	Glu	Leu	Pro	Leu	Met	Asp	Val
3920						3925					3930			
Leu	Phe	Gly	Ala	Asp	Ala	Gly	Leu	Leu	Asn	Glu	Thr	Ala	Tyr	Thr
3935						3940					3945			
Gln	Pro	Ala	Leu	Phe	Ala	Val	Glu	Val	Ala	Leu	Phe	Arg	Leu	Val
3950						3955					3960			
Glu	Ser	Trp	Gly	Leu	Arg	Pro	Asp	Phe	Leu	Ala	Gly	His	Ser	Ile
3965						3970					3975			

Gly Glu Ile Ala Ala Ala His Val Ala Gly Val Leu Ser Leu Asp
 3980 3985 3990
 Asp Ala Cys Ala Leu Val Glu Ala Arg Gly Arg Leu Met Gly Ala
 3995 4000 4005
 Leu Pro Ala Gly Gly Val Met Ile Ala Val Gln Ala Ser Glu Asp
 4010 4015 4020
 Glu Val Leu Pro Leu Leu Thr Asp Arg Val Ser Ile Ala Ala Ile
 4025 4030 4035
 Asn Gly Pro Gln Ser Val Val Ile Ala Gly Asp Glu Ala Asp Ala
 4040 4045 4050
 Val Ala Ile Val Glu Ser Phe Thr Gly Arg Lys Ser Lys Arg Leu
 4055 4060 4065
 Ser Val Ser His Ala Phe His Ser Pro His Met Asp Gly Met Leu
 4070 4075 4080
 Glu Asp Phe Arg Val Val Ala Glu Gly Leu Ser Tyr Asp Ala Pro
 4085 4090 4095
 Arg Ile Pro Val Val Ser Asn Leu Thr Gly Ala Leu Val Thr Asp
 4100 4105 4110
 Glu Met Gly Ser Ala Asp Phe Trp Val Arg His Val Arg Glu Ala
 4115 4120 4125
 Val Arg Phe Leu Asp Gly Ile Arg Ala Leu Glu Ala Ala Gly Val
 4130 4135 4140
 Thr Thr Tyr Val Glu Leu Gly Pro Asp Gly Val Leu Ser Ala Met
 4145 4150 4155
 Ala Gln Glu Cys Val Thr Glu Gly Gly Ala Ala Phe Val Pro Val
 4160 4165 4170
 Leu Arg Lys Gly Arg Pro Glu Ala Glu Thr Val Met Ala Thr Leu
 4175 4180 4185
 Gly Gln Ala His Val Arg Gly Val Ala Val Asp Trp His Ser Val
 4190 4195 4200
 Tyr Gly Thr Gly Ala Gln Arg Val Asp Leu Pro Thr Tyr Ser Phe
 4205 4210 4215
 Gln Arg Gln Arg Tyr Trp Pro Ala Ala Ser Ser Thr Ala Gly Gly
 4220 4225 4230
 Ser Val Asp Arg Ser Val Asp Ala Val Asp Ala Arg Phe Trp Asp
 4235 4240 4245
 Ala Val Glu Arg Glu Asp Leu Ala Ser Leu Ala Ala Glu Leu Asp
 4250 4255 4260
 Leu Asp Asp Asp Ala Pro Phe Ser Glu Leu Ala Pro Ala Leu Ser
 4265 4270 4275
 Ala Trp Arg Arg Glu Arg Arg Ala Leu Ser Glu Val Asp Gly Trp
 4280 4285 4290

Arg Tyr Arg Val Ser Trp Lys Pro Leu Ala Asp Val Ser Ala Ser
 4295 4300 4305
 Gly Leu Ser Gly Ser Trp Val Val Ile Ser Pro Ala Gly Gly Val
 4310 4315 4320
 Asp Asp Ser Ala Val Val Gly Ala Leu Val Gly Arg Gly Ala Glu
 4325 4330 4335
 Val Arg Arg Val Val Val Glu Ala Gly Val Asp Arg Ser Ala Leu
 4340 4345 4350
 Ala Gly Leu Leu Ala Asp Ala Gly Ser Ala Ala Gly Val Val Ser
 4355 4360 4365
 Leu Leu Gly Leu Asp Glu Ser Glu Gly Leu Leu Gly Thr Val Gly
 4370 4375 4380
 Leu Val Gln Ala Leu Gly Asp Ala Gly Val Glu Ala Pro Leu Trp
 4385 4390 4395
 Cys Leu Thr Arg Gly Ala Val Ser Val Gly Arg Ser Asp Arg Leu
 4400 4405 4410
 Val Ser Pro Val Gln Ala Gln Val Trp Gly Leu Gly Arg Val Ala
 4415 4420 4425
 Ala Leu Glu Val Pro Glu Arg Trp Gly Gly Leu Ile Asp Leu Pro
 4430 4435 4440
 Glu Val Leu Asp Glu Arg Ala Val Ser Arg Leu Val Gly Val Leu
 4445 4450 4455
 Ser Gly Gly Gly Ser Gly Glu Asp Gln Val Ala Val Arg Ser Ser
 4460 4465 4470
 Gly Val Phe Gly Arg Arg Leu Val Arg Ala Pro Arg Ala Glu Gly
 4475 4480 4485
 Ala Ser Ala Trp Ser Pro Thr Gly Thr Val Leu Val Thr Gly Gly
 4490 4495 4500
 Thr Gly Val Leu Gly Gly Arg Val Ala Arg Trp Leu Ala Gly Ala
 4505 4510 4515
 Gly Ala Glu Arg Leu Val Leu Thr Ser Arg Arg Gly Pro Asp Ala
 4520 4525 4530
 Pro Gly Ala Ala Glu Leu Val Glu Glu Leu Ala Gly Ser Gly Val
 4535 4540 4545
 Glu Val Ser Val Val Ala Cys Asp Ala Ala Asp Arg Asp Ala Leu
 4550 4555 4560
 Arg Ala Leu Leu Ser Ala Glu Ala Gly Thr Leu Thr Ala Val Ile
 4565 4570 4575
 His Thr Ala Gly Val Leu Asp Asp Gly Val Leu Asp Ala Leu Thr
 4580 4585 4590
 Pro Asp Arg Ile Asp Ser Val Leu Arg Ala Lys Ala Val Ser Ala
 4595 4600 4605

Ile Asn Leu His Glu Leu Thr Ala Glu Leu Gly Ile Glu Leu Ser
 4610 4615 4620
 Ala Phe Val Leu Phe Ser Ser Val Thr Gly Thr Trp Gly Thr Ala
 4625 4630 4635
 Gly Gln Ala Asn Tyr Ala Ala Ala Asn Ala Tyr Leu Asp Ala Leu
 4640 4645 4650
 Ala Glu Gln Arg Arg Ala Asp Gly Leu Ala Ala Thr Ser Ile Ala
 4655 4660 4665
 Trp Gly Pro Trp Ala Glu Gly Gly Met Ala Ala Asp Ala Ala Leu
 4670 4675 4680
 Glu Ala Arg Met Arg Arg Gly Gly Val Pro Pro Met Lys Gly Glu
 4685 4690 4695
 Ala Ala Val Asn Ala Leu Gln Arg Ala Leu Asn Ala Asn Asp Thr
 4700 4705 4710
 Val Val Thr Val Val Asp Val Glu Trp Glu Arg Phe Ala Pro Gly
 4715 4720 4725
 Phe Thr Ala Ala Arg Ala Ser Thr Leu Leu Ala Glu Leu Pro Glu
 4730 4735 4740
 Ala Gln Arg Ala Leu Ala Pro Gln Glu Gly Asp Glu Gly Gln Asp
 4745 4750 4755
 Asp Gly Ala Val His Gly Arg Gly Gly His Ser Leu Ala Glu Arg
 4760 4765 4770
 Leu Ala Glu Leu Ser Ala Ala Glu Arg Asp Arg Leu Leu Leu Gly
 4775 4780 4785
 Leu Val Arg Lys Glu Val Ala Ala Val Leu Gly His Ala Gly Val
 4790 4795 4800
 Glu Ser Ile Gly Ala Ala Arg Ala Phe Lys Glu Leu Gly Phe Asp
 4805 4810 4815
 Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Gly Ala Val Thr
 4820 4825 4830
 Gly Leu Arg Leu Pro Ala Thr Leu Ile Tyr Asp Tyr Pro Thr Ser
 4835 4840 4845
 Gly Ala Leu Ala Glu Tyr Leu Arg Gly Glu Leu Leu Gly Thr Gln
 4850 4855 4860
 Ala Val Val Ser Gly Pro Val Ser Asn Ala Val Ala Val Asp Asp
 4865 4870 4875
 Asp Pro Ile Ala Ile Val Ala Met Ser Cys Arg Phe Pro Gly Gly
 4880 4885 4890
 Val Arg Thr Pro Glu Asp Leu Trp Gln Leu Leu Ala Thr Gly Arg
 4895 4900 4905
 Asp Ala Ile Gly Glu Phe Pro Glu Asp Arg Gly Trp Asp Ala Glu
 4910 4915 4920

Ala Leu	Phe Gly	Pro Gln	Phe	Glu Gln	Asp Ala	Pro	Tyr Ala	Arg	
4925			4930				4935		
Glu Gly	Gly Phe	Leu Tyr	Asp	Val Ala	Asp Phe	Asp	Pro Ala	Phe	
4940			4945			4950			
Phe Gly	Ile Ser	Pro Arg	Glu	Ala Leu	Ala Met	Asp	Pro Gln	Gln	
4955			4960			4965			
Arg Leu	Leu Leu	Glu Thr	Ser	Trp Glu	Ala Phe	Glu	Arg Ala	Gly	
4970			4975			4980			
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 <213> Streptomyces aizunensis

<400> 27

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35 40 45

Val Arg Ser Pro Glu Glu Leu Trp Glu Leu Leu Arg Thr Gly Gly Asp
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Ala Leu Thr Ala Phe Pro Ala Asp Arg Gly Trp Asp Leu Asp Asn Leu
65 70 75 80

Phe Ser Asp Asp Pro Asp Asp His Asn Thr Ser Val Thr Arg Glu Gly
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 Ser Pro Arg Glu Ala Met Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
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 Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Gln Ala
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 145 150 155 160
 Tyr Leu Thr Pro Leu Leu Glu Ala Ala Glu Asp Tyr Ala Gly His Leu
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 Phe Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ala
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 Ser Leu Val Ala Leu His Leu Ala Val Gln Ala Leu Arg Ala Gly Glu
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 Cys Ser Leu Ala Val Ala Gly Gly Val His Val Met Ser Thr Pro Gly
 225 230 235 240
 Leu Phe Val Glu Phe Ser Lys Gln Arg Gly Leu Ser Thr Asp Gly Arg
 245 250 255
 Cys Lys Ala Phe Ala Ala Gly Ala Asp Gly Phe Gly Pro Ala Glu Gly
 260 265 270
 Val Gly Val Leu Leu Leu Glu Arg Leu Ser Asp Ala Arg Lys Asn Gly
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 290 295 300
 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
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 Val Val Glu Ala His Gly Thr Gly Thr Ser Leu Gly Asp Pro Ile Glu
 340 345 350
 Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Asp Arg Pro Ala Asp Gln
 355 360 365
 Pro Leu Leu Leu Gly Ser Val Lys Ser Asn Ile Gly His Thr Gln Ala
 370 375 380
 Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Leu Ala Met Gln His
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 Gly Val Leu Pro Gln Ser Leu His Ile Asp Glu Pro Ser Pro His Val
 405 410 415

Asp Trp Glu Ser Gly Ala Val Ser Leu Leu Thr Glu Gln Thr Ala Trp
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 Pro Glu Thr Thr His Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Phe
 435 440 445
 Ser Gly Thr Asn Ala His Val Ile Val Glu Gln Ala Pro Val Val Glu
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 Glu Val Ala Gly Asp Pro Ala Gly Val Val Glu Gly Ser Gly Pro Gly
 465 470 475 480
 Val Val Pro Val Val Pro Trp Val Leu Ser Gly Lys Ser Ala Gly Ala
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 Ala Val Asp Val Pro Ser Val Asp Val Gly Trp Ser Leu Ala Ser Ser
 515 520 525
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 Gly Val Ala Ala Val Ala Ser Gly Val Met Ala Ala Gly Val Val Thr
 545 550 555 560
 Gly Ser Val Val Gly Gly Lys Thr Ala Phe Val Phe Pro Gly Gln Gly
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 Ser Gln Trp Val Gly Met Ala Val Gly Leu Leu Asp Ser Ser Pro Val
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 Phe Ala Ala Arg Val Glu Glu Cys Ala Lys Ala Leu Glu Pro Phe Thr
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 Asp Trp Ser Leu Val Asp Val Leu Arg Gly Val Glu Gly Ala Pro Ser
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 Leu Glu Arg Val Asp Val Val Gln Pro Ala Leu Phe Ala Val Met Val
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 Ser Leu Ala Glu Val Trp Arg Ala Ala Gly Val Arg Pro Gly Ala Val
 645 650 655
 Ile Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ile
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 675 680 685
 Ile Gly Arg Val Leu Ala Gly Leu Gly Gly Met Val Ser Val Pro Leu
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 Pro Ala Lys Ala Val Arg Glu Leu Ile Ala Pro Trp Gly Glu Gly Arg
 705 710 715 720
 Ile Ser Val Ala Ala Val Asn Gly Pro Ser Ser Val Val Val Ser Gly
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 740 745 750

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 755 760 765
 Val Glu Leu Leu Arg Glu Glu Leu Ala Glu Leu Ala Pro Ile Val
 770 775 780
 Pro Arg Ala Ala Glu Val Pro Phe Leu Ser Thr Val Thr Gly Glu Trp
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 Val Arg Gly Pro Glu Leu Asp Gly Gly Tyr Trp Phe Gln Asn Leu Arg
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 Arg Thr Val Glu Leu Glu Glu Ala Thr Arg Thr Leu Leu Glu Gln Gly
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 Met Gln Glu Thr Val Glu Asp Ala Gly Arg Glu Ala Ala Val Leu Gly
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 Ser Leu Arg Arg Gly Glu Gly Gly Leu Glu Arg Phe Trp Leu Ser Leu
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 885 890 895
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 980 985 990
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1130			1135			1140		
Ala Asp	Leu Asp	Gly Arg	Thr	Leu Glu	Arg Leu	Ala	Gly Val	Leu
1145			1150			1155		
Ala Gly	Asp Gly	Ser Glu	Asp	Gln Val	Ala Leu	Arg	Ala Ser	Gly
1160			1165			1170		
Leu Phe	Gly Arg	Arg Leu	Val	His Ala	Pro Leu	Ala	Asp Thr	Ala
1175			1180			1185		
Ala Val	Gln Glu	Trp Arg	Pro	Gln Gly	Thr Thr	Leu	Val Thr	Gly
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Gly Thr	Gly Ala	Leu Gly	Ala	His Val	Ala Arg	Trp	Leu Ala	Gly
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Asn Gly	Ala Glu	His Leu	Leu	Leu Thr	Ser Arg	Arg	Gly Pro	Asp
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Ala Pro	Gly Ala	Ala Ala	Leu	Arg Asp	Glu Leu	Thr	Ala Leu	Gly
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Thr Gln	Val Thr	Ile Ala	Ser	Cys Asp	Met Ala	Asp	Arg Asp	Ala
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Val Thr	Ala Leu	Ile Ala	Ala	Ile Pro	Ala Asp	Gln	Pro Leu	Thr
1265			1270			1275		
Ala Val	Ile His	Ala Ala	Ala	Val Val	Asp Asp	Gly	Val Ile	Glu
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Thr Leu	Ala Pro	Glu Gln	Val	Glu Ala	Val Leu	Arg	Val Lys	Val
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Arg Thr Leu Val Ser Leu Gln His Ala Leu Asp Arg Asp Glu Thr
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 Val Ala Ala Val Leu Gly His Ala Asp Leu Ala Ala Val Glu Ala
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 Glu Leu Arg Asn Arg Leu Gly Ala Val Ser Gly Leu Lys Leu Pro
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<212> DNA

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<212> PRT

<213> Streptomyces aizunensis

<400> 29

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Gln Asp Pro Ile Ala Ile Val Gly Met Gly Cys Arg Tyr Pro Gly Gly
 35 40 45

Val Thr Ser Pro Glu Glu Leu Trp Gln Leu Val Asp Gly Gly Asp
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Ala Ile Ser Gly Phe Pro Ala Asp Arg Gly Trp Asp Met Glu Thr Val
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Tyr His Pro Asp Pro Glu His Pro Gly Thr Ser Tyr Ala Asn Gln Gly
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 Met Arg Gly Lys Gln Val Gly Val Phe Val Gly Thr Ser Asn His Asp
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 Phe Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser
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 Cys Ser Leu Ala Leu Ala Gly Gly Ala Thr Leu Met Ser Ala Pro Gly
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 245 250 255
 Cys Lys Ala Phe Ser Pro Asp Ala Asp Gly Phe Ser Leu Ala Glu Gly
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 Val Gly Ile Leu Leu Val Glu Arg Leu Ser Asp Ala Arg Arg Lys Gly
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 His Pro Val Leu Ala Val Val Arg Gly Thr Ala Val Asn Gln Asp Gly
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 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
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 Ile Leu Gln Ala Leu Ser Asn Ala Arg Leu Thr Pro Asp Gln Val Asp
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 Ala Val Glu Ala His Gly Thr Gly Thr Gly Leu Gly Asp Pro Ile Glu
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 Ala Gln Ala Leu Ile Ala Thr Tyr Gly Gln Asp Arg Pro Asp Gly Arg
 355 360 365
 Pro Leu Trp Leu Gly Ser Leu Lys Thr Asn Ile Gly His Ala Gln Ala
 370 375 380
 Ala Ala Gly Val Ala Gly Val Ile Lys Ser Val Met Ala Met Arg His
 385 390 395 400
 Gly Val Leu Pro Arg Thr Leu His Val Asp Glu Pro Thr Pro Glu Val
 405 410 415
 Asp Trp Ser Ala Gly Asp Val Ser Leu Leu Thr Glu Ala Arg Pro Trp
 420 425 430

Pro Leu Gly Asp Gln Pro Arg Arg Ile Gly Val Ser Ser Phe Gly Met
 435 440 445
 Ser Gly Thr Asn Ala His Ile Ile Leu Glu Ser Ala Gln Glu Tyr Ala
 450 455 460
 Asp Gly Arg Gln Ala Asp Ala Gly Thr Ala Gly Asn Glu Pro Ala Thr
 465 470 475 480
 Gly Arg Thr Asn Pro Pro Gly Ala Leu Pro Val Val Leu Ser Gly Arg
 485 490 495
 Thr Glu Pro Ala Leu Arg Ala Gln Ala Ala Ala Leu His Ala His Leu
 500 505 510
 Ala Ala His Pro Gly Leu Gly Ile Ala Asp Leu Ala Phe Ser Gln Ala
 515 520 525
 Leu Thr Arg Ala Ala Leu Asp Arg Arg Ala Ala Val Val Ala Asp Asp
 530 535 540
 Arg Asp Ala Leu Leu Ala Gly Leu Ala Ala Leu Ala Glu Gly Arg Pro
 545 550 555 560
 Ser Ala Asp Val Val Glu Gly Ser Ala Thr Asp Gly Lys Leu Ala Phe
 565 570 575
 Leu Phe Thr Gly Gln Gly Ser Gln Arg Pro Gly Met Gly Arg Glu Leu
 580 585 590
 Tyr Ala Thr Tyr Pro Val Phe Ala Gln Ala Leu Asp Ala Val Cys Glu
 595 600 605
 Arg Leu Glu Leu Pro Leu Lys Asp Val Leu Phe Gly Thr Asp Gly Ala
 610 615 620
 Ala Gly Ala Ala Leu Asp Glu Thr Ala Tyr Thr Gln Pro Ala Leu Phe
 625 630 635 640
 Ala Val Glu Val Ala Leu Phe Arg Leu Val Glu Ser Trp Gly Leu Lys
 645 650 655
 Pro Asp Tyr Leu Ala Gly His Ser Ile Gly Glu Ile Ala Ala Ala His
 660 665 670
 Val Ala Gly Val Phe Ser Leu Glu Asp Ala Cys Thr Leu Val Glu Ala
 675 680 685
 Arg Gly Arg Leu Met Gln Ala Leu Pro Thr Gly Gly Val Met Ile Ala
 690 695 700
 Val Glu Ala Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Trp Val
 705 710 715 720
 Ser Ile Ala Ala Val Asn Gly Pro Arg Ser Val Val Val Ala Gly Asp
 725 730 735
 Glu Asp Ala Ala Val Ala Ile Ala Glu Ala Phe Ala Ala Gln Gly Arg
 740 745 750
 Lys Thr Lys Lys Leu Thr Val Ser His Ala Phe His Ser Pro His Met
 755 760 765

Asp Gly Met Leu Asp Ala Phe Arg Thr Val Ala Gln Gly Leu Ser Tyr
 770 775 780
 Gly Thr Pro Arg Ile Pro Val Val Ser Asn Leu Thr Gly Ala Leu Val
 785 790 795 800
 Thr Asp Glu Met Gly Ser Ala Asp Phe Trp Val Arg His Val Arg Glu
 805 810 815
 Ala Val Arg Phe Leu Asp Gly Ile Arg Trp Leu Glu Ser Arg Gly Val
 820 825 830
 Thr Thr Tyr Ile Glu Leu Gly Pro Gly Gly Val Leu Ser Ala Leu Gly
 835 840 845
 Gln Asp Cys Gln Thr Ala Thr Gly Pro Arg Ala Ala Ala Phe Leu Pro
 850 855 860
 Ala Leu Arg Thr Gly Arg Pro Glu Ala Ser Ser Leu Thr Ala Ala Val
 865 870 875 880
 Ala Gly Ala His Val Arg Gly Leu Ser Pro Asp Trp Thr Val Arg Phe
 885 890 895
 Ala Gly Thr Gly Ala Gln Arg Val Glu Leu Pro Thr Tyr Ala Phe Gln
 900 905 910
 Arg Glu Leu Tyr Trp Pro Arg Asp Pro Phe Thr Asp Pro Ala Glu Ser
 915 920 925
 Ala His Gly Gly Glu Leu Gly Ala Thr Asp Ala Lys Phe Trp Glu Val
 930 935 940
 Val Asp Ser Glu Asp Leu Ala Ala Leu Ala Asp Thr Leu Gly Val Gly
 945 950 955 960
 Gly Asp Glu Pro Leu Ser Ser Val Leu Pro Ala Leu Ser Ala Trp His
 965 970 975
 Arg Arg His Arg Asp Arg Asp Thr Val Asp Gly Trp Arg Tyr Arg Val
 980 985 990
 Thr Trp Lys Pro Leu Thr Asp Thr Thr Pro Ala Ser Pro Ser Gly His
 995 1000 1005
 Trp Leu Leu Val Val Pro Thr Glu His Ala Asp Ala Pro Trp Ala
 1010 1015 1020
 Val Ala Ala Glu Arg Ala Leu Thr Ala Arg Gly Val Thr Val Ser
 1025 1030 1035
 Thr Val Val Leu Asp Ala Thr Leu Asp Asp Arg Ala Ala Thr Ala
 1040 1045 1050
 Arg Arg Ile Gly Glu Ala Leu Ala Ala Ser Ala Ala Thr Asp Ser
 1055 1060 1065
 Ala Pro Ala Gly Ala Glu Thr Leu Ala Gly Val Phe Ser Leu Leu
 1070 1075 1080
 Ala Leu Glu Glu Arg Pro His Pro Ala Asp Pro Ala Leu Ser Ala
 1085 1090 1095

Gly Leu Ala Ala Thr Val Ala Leu Ile Gln Ala Leu Gly Asp Ala
 1100 1105 1110
 Gly Val Glu Ala Pro Leu Trp Ala Ala Thr Cys Gly Ala Val Ser
 1115 1120 1125
 Thr Gly Arg Thr Asp Arg Leu Ser Ser Thr Ala Gln Ala Gln Val
 1130 1135 1140
 Trp Gly Leu Gly Arg Thr Ala Ala Leu Glu Leu Pro Val Arg Trp
 1145 1150 1155
 Gly Gly Leu Val Asp Leu Pro Gly Thr Pro Asp Glu Arg Ala Ala
 1160 1165 1170
 Gly Arg Leu Ala Asp Val Leu Gly Gly Leu Gly Gly Pro Gly Ala
 1175 1180 1185
 Glu Asp His Leu Ala Val Arg Ser Thr Gly Val Phe Val Arg Arg
 1190 1195 1200
 Leu Ala Arg Ala Thr Arg Asp Glu Arg Pro Thr Thr Glu Trp Ala
 1205 1210 1215
 Thr Thr Gly Thr Ala Leu Ile Thr Gly Gly Thr Gly Ala Leu Gly
 1220 1225 1230
 Arg His Val Ala Arg Trp Leu Ala Arg Thr Gly Ala Gln His Leu
 1235 1240 1245
 Leu Leu Val Ser Arg Arg Gly Pro Glu Ala Glu Gly Ala Asp Ala
 1250 1255 1260
 Leu Ala Ala Glu Leu Arg Ala Leu Gly Ala Glu Val Thr Ile Ala
 1265 1270 1275
 Ala Cys Asp Val Ala Asp Arg Asp Ala Val Ala Ala Leu Leu Ala
 1280 1285 1290
 Thr Leu Pro Ala Glu His Pro Leu Thr Asn Val Val His Ala Ala
 1295 1300 1305
 Gly Val Leu Asp Asp Gly Val Leu Asp Ala Gln Thr Pro Gln Arg
 1310 1315 1320
 Leu Ala Gly Val Leu Arg Pro Lys Ala His Ala Ala Gln Val Leu
 1325 1330 1335
 His Glu Leu Thr Arg Asp Leu Asp Leu Ser Ala Phe Val Leu Phe
 1340 1345 1350
 Ser Ser Val Ala Ala Val Phe Gly Ala Ala Gly Gln Ala Asn Tyr
 1355 1360 1365
 Ala Ala Ala Asn Ala Ser Leu Glu Ala Leu Ala Glu Gln Arg Arg
 1370 1375 1380
 Ala Asp Gly Leu Pro Ala Thr Val Leu Ala Trp Gly Ala Trp Ala
 1385 1390 1395
 Glu Gly Gly Met Ala Thr Asp Glu Leu Val Ala Glu Arg Leu Arg
 1400 1405 1410

Leu Ala	Gly Leu Pro Ala Leu	Ala Pro Glu Leu Ala	Leu Ser Ala
1415	1420	1425	
Leu His	Arg Ala Leu Thr Leu	Asp Glu Thr Ala Ser	Leu Val Ala
1430	1435	1440	
Asp Ile	Asp Trp Glu Arg Leu	Ala Pro Gly Leu Thr	Ala Val Arg
1445	1450	1455	
Pro Cys	Pro Leu Ile Ala Asp	Leu Pro Glu Ala Val	His Ala Leu
1460	1465	1470	
Ala Gly	Ala Glu Ala Ser Thr	Gly Pro Gly Ala Ala	Ala Asp Thr
1475	1480	1485	
Phe Ala	Arg Gln Leu Ala Asp	Ala Pro Ala Gly Glu	Arg Asp Gln
1490	1495	1500	
Leu Ala	Leu Glu Phe Val Arg	Thr Gln Val Ala Ala	Val Leu Gly
1505	1510	1515	
Tyr Ala	Gly Pro Glu Ser Val	Asp Pro Gly Ser Ala	Phe Arg Asp
1520	1525	1530	
Leu Gly	Phe Asp Ser Leu Thr	Ala Val Glu Ile Arg	Asn Leu Leu
1535	1540	1545	
Thr Ser	Arg Thr Gly Leu Arg	Leu Pro Ala Thr Leu	Ile Phe Asp
1550	1555	1560	
Tyr Pro	Asn Ser Leu Ser Leu	Ala Ala Phe Leu Gln	Gly Glu Leu
1565	1570	1575	
Leu Gly	Ala Gln Ala Thr Asp	Pro Ala Arg His Thr	Pro Ala Gly
1580	1585	1590	
Pro Gly	Thr Ala Thr Asp Asp	Asp Pro Ile Ala Ile	Val Ala Met
1595	1600	1605	
Ser Cys	Arg Phe Pro Gly Gly	Val Gln Ser Pro Glu	Asp Leu Trp
1610	1615	1620	
Gln Leu	Leu Ser Thr Gly Arg	Asp Ala Ile Ser Gly	Phe Pro Gly
1625	1630	1635	
Asp Arg	Gly Trp Asp Leu Asp	Gly Leu Tyr Asp Pro	Glu Ser Ala
1640	1645	1650	
Gly Glu	Asn Thr Ser Tyr Val	Arg Glu Gly Gly Phe	Leu Ala Gly
1655	1660	1665	
Ala Thr	Glu Phe Asp Pro Ala	Phe Phe Gly Ile Ser	Pro Arg Glu
1670	1675	1680	
Ala Leu	Ala Met Asp Pro Gln	Gln Arg Leu Leu Leu	Glu Thr Ser
1685	1690	1695	
Trp Glu	Ala Phe Glu Arg Ala	Gly Ile Asp Pro Ala	Thr Val Arg
1700	1705	1710	
Gly Glu	Gln Ile Gly Val Phe	Thr Gly Thr Asn Gly	Gln Asp Tyr
1715	1720	1725	

Leu Asn Val Ile Leu Ala Ala Pro Asp Gly Val Glu Gly Phe Leu
 1730 1735 1740
 Gly Thr Gly Asn Ala Ala Ser Val Val Ser Gly Arg Val Ser Tyr
 1745 1750 1755
 Val Leu Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys
 1760 1765 1770
 Ser Ser Ser Leu Val Ala Leu His Trp Ala Ile Gln Ala Leu Arg
 1775 1780 1785
 Gln Gly Glu Cys Thr Met Ala Leu Ala Gly Gly Val Thr Val Met
 1790 1795 1800
 Ser Thr Pro Ala Ser Phe Ile Asp Phe Ser Arg Gln Arg Gly Leu
 1805 1810 1815
 Ala Glu Asp Gly Arg Ile Lys Ala Phe Ala Ala Ala Ala Asp Gly
 1820 1825 1830
 Thr Gly Trp Gly Glu Gly Val Gly Ile Leu Leu Val Glu Arg Leu
 1835 1840 1845
 Ser Asp Ala Gln Arg Asn Gly His Pro Val Leu Ala Ile Val Arg
 1850 1855 1860
 Gly Ser Ala Ile Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala
 1865 1870 1875
 Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Gln Ala Leu Ala
 1880 1885 1890
 Ser Gly Gly Leu Thr Thr Met Asp Val Asp Ala Val Glu Ala His
 1895 1900 1905
 Gly Thr Gly Thr Lys Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu
 1910 1915 1920
 Leu Ala Thr Tyr Gly Gln Asp Arg Pro Glu Gly Arg Pro Leu Leu
 1925 1930 1935
 Leu Gly Ser Ile Lys Ser Asn Leu Gly His Thr Gln Ala Ala Ala
 1940 1945 1950
 Gly Val Ala Gly Val Met Lys Met Val Leu Ala Met Gln His Gly
 1955 1960 1965
 Val Leu Pro Gln Thr Leu His Val Asp Glu Pro Thr Pro His Val
 1970 1975 1980
 Asp Trp Ser Ala Gly Asp Val Ala Leu Leu Ala Asp Ala Val Ala
 1985 1990 1995
 Trp Pro Glu Thr Gly Arg Pro Arg Arg Ala Gly Val Ser Ser Phe
 2000 2005 2010
 Gly Ile Ser Gly Thr Asn Ala His Thr Ile Ile Glu Gln Ala Pro
 2015 2020 2025
 Ala Ala Val Ala Pro Val Pro Pro Val Ala Thr Thr Pro Ala Arg
 2030 2035 2040

Ala Asp	Gly Pro Gln Pro	Trp	Leu Leu Ser Ala Lys	Thr Arg Asp
2045		2050		2055
Ala Leu	His Asp Gln Ala Arg	Arg Leu His Ala His	Ala Glu Leu	
2060		2065		2070
Asn Pro	Glu Leu Ser Pro	Ala	Asp Leu Gly Leu Ser	Leu Ala Ala
2075		2080		2085
Gly Arg	Ser Ala Phe Glu Arg	Arg Ala Ala Val	Ile	Ala Ala Asp
2090		2095		2100
Arg Asp	Gly Leu Leu Ala	Gly	Leu Ala Ala Leu	Ala Asp Gly Gly
2105		2110		2115
Ala Ala	Ala Gly Leu Val	Glu	Gly Ser Pro Val	Ala Gly Lys Leu
2120		2125		2130
Ala Phe	Leu Phe Thr Gly	Gln	Gly Ser Gln Arg	Leu Gly Met Gly
2135		2140		2145
Arg Glu	Leu Tyr Asp Thr	Tyr	Pro Val Phe Ala	Asp Ala Leu Asp
2150		2155		2160
Ala Val	Cys Ala His Val	Asp	Ala His Leu Glu	Val Pro Leu Lys
2165		2170		2175
Asp Val	Leu Phe Gly Ala	Asp	Thr Gly Leu Leu	Asp Gln Thr Ala
2180		2185		2190
Tyr Thr	Gln Pro Ala Leu	Phe	Ala Val Glu Val	Ala Leu Phe Arg
2195		2200		2205
Leu Val	Glu Ser Trp Gly	Leu	Arg Pro Asp Phe	Leu Ala Gly His
2210		2215		2220
Ser Ile	Gly Glu Ile Ala	Ala	Ala His Val Ala	Gly Val Phe Ser
2225		2230		2235
Leu Gln	Asp Ala Ser Glu	Leu	Val Val Ala Arg	Gly Arg Leu Met
2240		2245		2250
Gln Ala	Leu Pro Thr Gly	Gly	Val Met Ile Ala	Val Gln Ala Ser
2255		2260		2265
Glu Asp	Glu Val Leu Pro	Leu	Leu Thr Asp Arg	Val Ser Ile Ala
2270		2275		2280
Ala Ile	Asn Gly Pro Gln	Ser	Val Val Ile Ala	Gly Asp Glu Ala
2285		2290		2295
Asp Ala	Val Ala Ile Ala	Glu	Ser Phe Thr Gly	Arg Lys Ser Lys
2300		2305		2310
Arg Leu	Thr Val Ser His	Ala	Phe His Ser Pro	His Met Asp Gly
2315		2320		2325
Met Leu	Glu Asp Phe Arg	Ala	Val Ala Glu Gly	Leu Ser Tyr Glu
2330		2335		2340
Ala Pro	Arg Ile Pro Val	Val	Ser Asn Leu Thr	Gly Ala Leu Ile
2345		2350		2355

Ser Asp Glu Met Gly Ser Ala Glu Phe Trp Val Arg His Val Arg
 2360 2365 2370
 Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr Leu Glu Ala Ala
 2375 2380
 Gly Val Thr Lys Tyr Val Glu Leu Gly Pro Asp Gly Val Leu Ser
 2390 2395 2400
 Ala Met Ala Gln Asp Cys Val Ser Gly Glu Gly Ser Val Phe Ile
 2405 2410 2415
 Pro Val Leu Arg Lys Ala Arg Pro Glu Pro Glu Ser Val Thr Thr
 2420 2425 2430
 Ala Leu Thr Thr Ala His Val His Gly Ile Pro Val Asp Trp Gln
 2435 2440 2445
 Ala Phe Phe Ala Gly Thr Gly Ala Arg Arg Val Asp Leu Pro Thr
 2450 2455 2460
 Tyr Ala Phe Gln Arg Gln Arg Tyr Trp Pro Ala Val Ser Ser Leu
 2465 2470 2475
 Tyr Leu Gly Asp Val Glu Ala Ile Gly Leu Asp Asp Thr Ala His
 2480 2485 2490
 Pro Leu Leu Ser Ala Gly Val Ala Leu Pro Glu Ser Asp Gly Met
 2495 2500 2505
 Val Phe Ala Gly Arg Leu Ala Leu Ser Thr His Ala Trp Leu Ala
 2510 2515 2520
 Asp His Ala Ile Leu Gly Ser Val Leu Leu Pro Gly Thr Ala Phe
 2525 2530 2535
 Val Glu Leu Ala Thr Arg Ala Gly Asp Gln Val Gly Cys Asp Tyr
 2540 2545 2550
 Leu Glu Glu Leu Thr Leu Glu Ala Pro Leu Val Leu Pro Glu His
 2555 2560 2565
 Gly Gly Val Gln Leu Arg Val Trp Val Gly Ala Ala Asp Glu Ser
 2570 2575 2580
 Gly Arg Arg Pro Phe Ala Leu His Ser Arg Ala Glu Gly Leu Pro
 2585 2590 2595
 Val Glu Glu Pro Trp Thr Arg His Ala Gly Gly Val Leu Ala Glu
 2600 2605 2610
 Gly Gly Arg Pro Pro Ala Asp Phe Asp Leu Thr Ala Trp Pro Pro
 2615 2620 2625
 Pro Gly Ala Val Glu Val Asp Leu Asp Gly Arg Tyr Asp Gln Leu
 2630 2635 2640
 Asp Gly Ile Gly Phe Ala Tyr Gly Pro Thr Phe Arg Gly Leu Arg
 2645 2650 2655
 Thr Ala Trp Gln Leu Asp Gly Glu Ile Tyr Ala Glu Val Arg Leu
 2660 2665 2670

Pro Glu Gly Ala Glu Gly Glu Ala Gly Arg Phe Gly Leu His Pro
 2675 2680 2685
 Ala Leu Leu Asp Ala Ala Leu His Ala Ile Gly Leu Gly Gly Leu
 2690 2695 2700
 Gly Ala Asp Asp Gly Gln Gly Arg Leu Pro Phe Ala Trp Ser Gly
 2705 2710 2715
 Val Ser Leu His Ala Gly Gly Ala Ala Ala Leu Arg Val His Leu
 2720 2725 2730
 Ala Pro Ala Gly Ala Glu Gly Val Arg Leu Glu Ile Ala Asp Ala
 2735 2740 2745
 Ser Gly Ala Pro Val Ala Ala Val Glu Ser Leu Gly Leu Arg Pro
 2750 2755 2760
 Val Thr Ala Glu Gln Leu Arg Ala Ala Arg Ala Thr Tyr His Glu
 2765 2770 2775
 Ser Val Phe Arg Gln Gln Trp Thr Glu Leu Pro Gly Leu Gly Ala
 2780 2785 2790
 Pro Ala Ala Thr Pro Ala Val Arg Tyr Ala Phe Leu Gly Gly Asp
 2795 2800 2805
 Ser Gly Asp Ser Gly Asp Ser Gly Asp Thr Ala Ala Ala Asp Arg
 2810 2815 2820
 His Gln Asp Leu Ala Ala Leu Ala Ala Ala Ile Asp Ala Gly Arg
 2825 2830 2835
 Pro Val Pro Asp Glu Val Val Val Glu Leu Ala Ala Ala Pro Trp
 2840 2845 2850
 Ala Val Ser Ala Ser Ala Val His Ser Ala Ala His Asp Ala Leu
 2855 2860 2865
 Ala Leu Ile Gln Thr Trp Leu Ala Asp Asp Arg Phe Ala Ala Ala
 2870 2875 2880
 Arg Leu Val Phe Leu Thr Arg Gly Ala Val Ala Ala Asp Ala Gly
 2885 2890 2895
 Asp Asp Val Thr Asp Leu Ala Ala Ala Thr Val Trp Gly Leu Leu
 2900 2905 2910
 Arg Ser Ala Gln Thr Glu Asn Pro Gly Arg Ile Ala Leu Val Asp
 2915 2920 2925
 Thr Asp Gly His Asp Arg Ser Glu Gln Ala Leu Arg Ala Ala Leu
 2930 2935 2940
 Thr Ser Asp Glu Glu Arg Phe Ala Leu Arg Ala Gly Ala Val Leu
 2945 2950 2955
 Val Pro Arg Leu Ala Arg Val Glu Ile Gln Gln Asp Asp Ser Ala
 2960 2965 2970
 Arg Thr Pro Ala Leu Thr Pro Gly Gly Thr Val Leu Ile Thr Gly
 2975 2980 2985

Ala Thr	Gly Ala	Leu Gly	Gly	Leu Phe	Ala Arg	His	Leu Ala	Ala	
2990			2995			3000			
Glu His	Gly Val	Glu Arg	Leu	Leu Val	Gly Arg	Arg Gly	Ala		
3005			3010			3015			
Asp Ala	Pro Gly	Ala Ala	Glu	Leu Val	Ala Glu	Leu	Ala Glu	Ser	
3020			3025			3030			
Gly Thr	Leu Ala	Thr Trp	Ala	Ala Cys	Asp Val	Ala	Asp Arg	Asp	
3035			3040			3045			
Ala Leu	Ala Ala	Leu Leu	Ala	Asp Ile	Pro Ala	Glu	His Pro	Leu	
3050			3055			3060			
Thr Ala	Val Val	His Thr	Ala	Gly Val	Leu Asp	Asp	Gly Val	Ile	
3065			3070			3075			
Ser Ser	Leu Thr	Pro Glu	Arg	Leu Ser	Ala Val	Leu	Arg Pro	Lys	
3080			3085			3090			
Val Asp	Ala Ala	Trp Asn	Leu	His Glu	Leu Thr	Arg	Gly Leu	Asp	
3095			3100			3105			
Leu Ala	Ala Phe	Val Leu	Phe	Ser Ser	Thr Ser	Gly	Leu Phe	Gly	
3110			3115			3120			
Gly Pro	Gly Gln	Gly Asn	Tyr	Ala Ala	Ala Asn	Ser	Phe Leu	Asp	
3125			3130			3135			
Ala Leu	Ala Gln	His Arg	Arg	Ala His	Gly Leu	Pro	Ala Thr	Ser	
3140			3145			3150			
Thr Ala	Trp Gly	Leu Trp	Ser	Val Ala	Asp Gly	Met	Ala Gly	Ala	
3155			3160			3165			
Leu Asp	Ala Ala	Asp Val	Asn	Arg Met	Arg Arg	Ala	Gly Leu	Pro	
3170			3175			3180			
Pro Leu	Thr Ala	Ala Asp	Gly	Leu Gly	Leu Phe	Asp	Thr Ala	Val	
3185			3190			3195			
Ser Leu	Asp Glu	Ala Ser	Leu	Ala Leu	Met Arg	Val	Asp Thr	Glu	
3200			3205			3210			
Val Leu	Arg Thr	Gln Ala	Gly	Ala Gly	Thr Ile	Ala	Pro Leu	Leu	
3215			3220			3225			
Arg Gly	Leu Val	Arg Gly	Val	Ala Arg	Arg Ser	Val	Asp Val	Ser	
3230			3235			3240			
Ala Gly	Ala Gly	Gly Ala	Glu	Ser Glu	Leu Arg	Gly	Arg Leu	Ala	
3245			3250			3255			
Ala Leu	Thr Ala	Ala Glu	Gln	Asp Arg	Ala Leu	Leu	Asp Leu	Val	
3260			3265			3270			
Arg Thr	Gln Val	Ala Ala	Val	Leu Gly	His Ala	Gly	Pro Ala	Ala	
3275			3280			3285			
Val Glu	Ser Gly	Arg Ala	Phe	Lys Glu	Leu Gly	Phe	Asp Ser	Leu	
3290			3295			3300			

Thr Ala Val Glu Leu Arg Asn	Arg Leu Asn Ala Ala	Thr Ala Leu
3305	3310	3315
Arg Leu Pro Ala Thr Leu Ile	Phe Asp Tyr Pro Asp	Pro Thr Val
3320	3325	3330
Leu Ala Arg Tyr Leu Arg Gly	Glu Leu Ile Gly Asp	Asp Thr Thr
3335	3340	3345
Asp Ala Val Ala Glu Pro Leu	Thr Ala Val Ala Asp	Asp Glu Pro
3350	3355	3360
Ile Ala Ile Val Ala Met Ser	Cys Arg Tyr Pro Gly	Asp Val Arg
3365	3370	3375
Thr Pro Glu Asp Leu Trp Gln	Leu Leu Thr Ala Gly	Ala Asp Gly
3380	3385	3390
Ile Thr Arg Leu Pro Glu Asn	Arg Gly Trp Asp Thr	Glu Gly Leu
3395	3400	3405
Tyr Asp Pro Asp Pro Glu Ser	Gln Gly Thr Ser Tyr	Ala Arg Asp
3410	3415	3420
Gly Gly Phe Leu His Asp Ala	Ala Glu Phe Asp Ala	Ser Phe Phe
3425	3430	3435
Gly Ile Ser Pro Arg Glu Ala	Leu Ala Met Asp Pro	Gln Gln Arg
3440	3445	3450
Leu Leu Leu Glu Thr Thr Trp	Glu Val Phe Glu Arg	Ala Gly Ile
3455	3460	3465
Ala Pro Ser Ala Val Arg Gly	Ser Arg Thr Gly Val	Phe Ala Gly
3470	3475	3480
Val Met Tyr His Asp Tyr Gly	Ala Arg Leu His Ala	Val Pro Asp
3485	3490	3495
Gly Val Glu Gly Tyr Leu Gly	Thr Gly Ser Ser Ser	Ser Ile Val
3500	3505	3510
Ser Gly Arg Val Ala Tyr Thr	Phe Gly Leu Glu Gly	Pro Ala Val
3515	3520	3525
Thr Val Asp Thr Ala Cys Ser	Ser Ser Leu Val Ala	Leu His Leu
3530	3535	3540
Ala Ala Gln Ala Leu Arg Asn	Gly Glu Cys Ser Leu	Ala Leu Ala
3545	3550	3555
Gly Gly Val Thr Val Met Phe	Thr Pro Gly Thr Phe	Ile Glu Phe
3560	3565	3570
Ser Arg Gln Arg Gly Leu Ala	Ala Asp Gly Arg Cys	Lys Ser Phe
3575	3580	3585
Ala Ala Ala Ala Asp Gly Thr	Gly Trp Gly Glu Gly	Ala Gly Met
3590	3595	3600
Leu Leu Leu Glu Arg Leu Ser	Asp Ala Arg Arg Asn	Gly His Gln
3605	3610	3615

Val	Leu	Ala	Val	Val	Arg	Gly	Ser	Ala	Val	Asn	Gln	Asp	Gly	Ala
3620						3625					3630			
Ser	Asn	Gly	Leu	Thr	Ala	Pro	Asn	Gly	Pro	Ser	Gln	Gln	Arg	Val
3635						3640					3645			
Ile	Arg	Gln	Ala	Leu	Ala	Asn	Ala	Gly	Val	Ala	Ala	Gly	His	Val
3650						3655					3660			
Asp	Ala	Val	Glu	Ala	His	Gly	Thr	Gly	Thr	Thr	Leu	Gly	Asp	Pro
3665						3670					3675			
Ile	Glu	Ala	Gln	Ala	Leu	Leu	Ala	Thr	Tyr	Gly	Gln	Glu	His	Thr
3680						3685					3690			
Asp	Asp	Arg	Pro	Leu	Leu	Leu	Gly	Ser	Val	Lys	Ser	Asn	Leu	Gly
3695						3700					3705			
His	Thr	Gln	Ala	Ala	Ser	Gly	Val	Ala	Gly	Val	Ile	Lys	Met	Val
3710						3715					3720			
Met	Ser	Met	Arg	His	Gly	Val	Leu	Pro	Lys	Thr	Leu	His	Val	Asp
3725						3730					3735			
Glu	Pro	Thr	Pro	His	Val	Asp	Trp	Ser	Ala	Gly	Ala	Val	Ser	Leu
3740						3745					3750			
Leu	Thr	Glu	Gln	Thr	Pro	Trp	Pro	Glu	Thr	Gly	Arg	Pro	Arg	Arg
3755						3760					3765			
Ala	Gly	Val	Ser	Ser	Phe	Gly	Ile	Ser	Gly	Thr	Asn	Ala	His	Ala
3770						3775					3780			
Ile	Ile	Glu	Gln	Ala	Pro	Glu	Pro	Asp	Pro	Ala	Arg	Ala	Lys	Ala
3785						3790					3795			
Thr	Ala	Arg	Pro	Ala	Pro	Asp	Ala	Ala	Ala	Pro	Ser	Ser	Val	Pro
3800						3805					3810			
Leu	Ile	Val	Ser	Ala	Arg	Gly	Glu	Asp	Ala	Leu	Arg	Ala	Gln	Ala
3815						3820					3825			
Arg	Arg	Leu	His	Ala	His	Val	His	Ala	Asp	Pro	Gly	Leu	Arg	Ala
3830						3835					3840			
Val	Asp	Leu	Gly	Leu	Ser	Leu	Ala	Thr	Thr	Arg	Ser	Ala	Leu	Glu
3845						3850					3855			
Gln	Arg	Ala	Ala	Leu	Val	Ala	Gly	Asp	Arg	Ala	Glu	Leu	Leu	Arg
3860						3865					3870			
Gly	Leu	Asp	Ala	Leu	Ala	Arg	Gly	Glu	Asp	Thr	Ala	Gly	Leu	Val
3875						3880					3885			
Arg	Gly	Thr	Ala	Arg	Glu	Gly	Gln	Val	Ala	Phe	Leu	Phe	Thr	Gly
3890						3895					3900			
Gln	Gly	Ser	Gln	Arg	Pro	Gly	Met	Gly	Arg	Glu	Leu	Tyr	Asp	Ala
3905						3910					3915			
His	Pro	Val	Phe	Ala	Asp	Ala	Leu	Asp	Glu	Ile	Cys	Gly	Glu	Leu
3920						3925					3930			

Asp Arg	His Leu Glu Val	Pro	Leu Lys Gly Val	Leu Phe Ala Thr
3935		3940		3945
Glu Gly	Asp Leu Ile His	Gln Thr	Ala Tyr Thr Gln	Pro Ala Leu
3950		3955		3960
Phe Ala	Val Glu Val Ala	Leu Phe Arg	Leu Leu Glu	Ser Arg Gly
3965		3970		3975
Val Gln	Pro Asp Phe Leu	Ala Gly His	Ser Ile Gly	Glu Ile Ala
3980		3985		3990
Ala Ala	His Val Ala Gly	Val Phe Ser	Leu Gln Asp	Ala Ser Glu
3995		4000		4005
Leu Val	Ala Ala Arg Gly	Arg Leu Met	Gln Ala Leu	Pro Thr Gly
4010		4015		4020
Gly Val	Met Ile Ala Val	Gln Ala Ser	Glu Asp Glu	Val Leu Pro
4025		4030		4035
Leu Leu	Thr Asp Arg Val	Ser Ile Ala	Ala Ile Asn	Gly Pro Gln
4040		4045		4050
Ser Val	Val Ile Ala Gly	Asp Glu Ala	Asp Ala Val	Ala Ile Ala
4055		4060		4065
Glu Ser	Phe Thr Asp Arg	Lys Ser Lys	Arg Leu Thr	Val Ser His
4070		4075		4080
Ala Phe	His Ser Pro His	Met Asp Gly	Met Leu Ala	Asp Phe Arg
4085		4090		4095
Lys Val	Ala Glu Gly Leu	Val Tyr Glu	Asn Pro Arg	Ile Pro Val
4100		4105		4110
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Ala Asp	Phe Trp Val Arg	His Val Arg	Glu Ala Val	Arg Phe Leu
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Asp Gly	Ile Arg Ala Leu	Glu Ala Ala	Gly Val Thr	Thr His Ile
4145		4150		4155
Glu Leu	Gly Pro Asp Gly	Val Leu Cys	Ala Met Ala	Gln Glu Cys
4160		4165		4170
Val Ser	Gly Glu Asp Thr	Val Phe Val	Pro Val Leu	Arg Pro Gly
4175		4180		4185
Arg Pro	Glu Ala Glu Thr	Val Thr Thr	Ala Leu Ala	Arg Val His
4190		4195		4200
Val Gln	Gly Val Pro Val	Asp Trp Gln	Ala Tyr Phe	Ser Gly Thr
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Gly Ala	Gln Arg Val Asp	Leu Pro Thr	Tyr Ala Phe	Gln Arg Lys
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Arg Tyr	Trp Leu Asp Val	Gly Val Ser	Val Glu Asp	Val Leu Ala
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Ser Leu Pro Gly Ser Asp Gly Leu Val Leu Thr Gly Arg Leu Ala
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Leu Ser Thr His Pro Trp Leu Ser Asp His Thr Val Met Asp Thr
4280 4285 4290

Val Leu Leu Pro Gly Thr Ala Phe Val Glu Leu Ala Leu Arg Ala
4295 4300 4305

Gly Glu Leu Val Gly Cys Gly Ala Val Glu Glu Leu Ala Leu Glu
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Ala Pro Leu Thr Leu Ala Asp Gln Gly Ala Val Gln Phe Gln Leu
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Ala Val Asp Ala Pro Asp Gly Ala Gly Arg Arg Thr Leu Thr Leu
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His Ser Arg Arg Ala Gly Ala Pro Ala Glu Glu Pro Trp Thr Arg
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His Ala Thr Gly Val Leu Thr Pro Glu Ala Ser Ala Val Pro Ala
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His Pro Phe Asp Leu Thr Ala Trp Pro Pro Ala Asp Ala Glu Pro
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Val Pro Thr Asp Ala Phe Tyr Pro Gly Ala Ala Ala Gly Leu
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Gly Tyr Gly Pro Val Phe Gln Gly Leu Arg Ala Ala Trp Arg Arg
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Gly Asp Glu Leu Phe Ala Glu Val Ala Leu Asp Glu Glu His Glu
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<400> 31

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 35 40 45
 Ile Asp Thr Pro Glu Lys Leu Trp Asp Leu Val Ala His Gly Arg Asp
 50 55 60
 Ala Val Ser Ala Tyr Pro Thr Asp Arg Gly Trp Asp Ala Glu Val Leu
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 Phe Asp Pro Asp Pro Glu Thr Gly Ile Glu Ala Tyr Glu Gln Val Gly
 85 90 95
 Gly Phe Leu His Asp Ala Ala Asp Phe Asp Pro Ala Phe Phe Gly Ile
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 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
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 Glu Thr Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Ala Thr
 130 135 140

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945 950 955 960

Trp Leu Ala Asp His Ala Val Met Gly Ser Ala Val Leu Pro Gly Thr
965 970 975

Ala Phe Val Glu Leu Ala Ile Arg Ala Gly Asp Gln Val Gly Cys Asp
980 985 990

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2150		2155		2160	
Ser Asn	Met Gly His	Thr Gln	Ala Ala Ala	Gly Val	Ala Gly Val
2165		2170		2175	
Ile Lys	Met Val Leu	Ala Ile	Gln His Gly	Val Leu	Pro Arg Thr
2180		2185		2190	
Leu His	Ala Asp Arg	Pro Ser	Pro His Val	Asp Trp	Ser Gln Gly
2195		2200		2205	
Ala Val	Ser Leu Leu	Thr Glu	Ser Val Pro	Trp Pro	Glu Thr Gly
2210		2215		2220	
Arg Pro	Arg Arg Ala	Gly Val	Ser Ser Phe	Gly Ile	Ser Gly Thr
2225		2230		2235	
Asn Ala	His Thr Ile	Ile Glu	Gln Ala Pro	Glu Glu	Ala Thr Val
2240		2245		2250	
Ala Pro	Ala Asp Ala	Val Ala	Ala Pro Ser	Ala Leu	Pro Leu Gln
2255		2260		2265	
Leu Ala	Gly Arg Ser	Ala Glu	Ala Leu Ser	Ala Gln	Ala Arg Ala
2270		2275		2280	
Leu Ser	Ala His Leu	Thr Ala	His Pro Asp	Val Pro	Leu Ala Asp
2285		2290		2295	
Leu Ala	Tyr Ser Leu	Ala Thr	Ser Arg Ala	Thr Phe	Asp His Arg
2300		2305		2310	
Ala Val	Leu Val Ala	Thr Glu	Gly Thr Thr	Ala Ala	Thr Ala Val
2315		2320		2325	
Thr Ala	Leu Asp Ala	Leu Ala	Asp Arg Arg	Thr Ala	Pro Gly Leu
2330		2335		2340	
Val Arg	Gly Thr Ala	Ser Lys	Gly Gly Arg	Thr Ala	Phe Leu Phe
2345		2350		2355	
Thr Gly	Gln Gly Ser	Gln Arg	Leu Gly Met	Gly Arg	Glu Leu Tyr
2360		2365		2370	
Glu Ala	His Pro Val	Phe Ala	Arg Ala Leu	Asp Ala	Val Cys Asp
2375		2380		2385	
Arg Leu	Glu Leu Pro	Leu Lys	Asp Val Leu	Phe Gly	Thr Asp Ala
2390		2395		2400	

Gly Leu	Leu Asn	Glu Thr	Val	Tyr Thr	Gln Pro	Gly	Leu Phe	Ala	
2405			2410			2415			
Val Glu	Val Ala	Leu Phe	Arg	Leu Leu	Glu Ser	Trp	Gly Val	Lys	
2420			2425			2430			
Pro Asp	Phe Leu	Ala Gly	His	Ser Ile	Gly Glu	Ile	Ala Ala	Ala	
2435			2440			2445			
His Val	Ala Gly	Val Leu	Ser	Leu Asp	Asp Val	Cys	Ala Leu	Val	
2450			2455			2460			
Glu Ala	Arg Gly	Arg Leu	Met	Gly Ala	Leu Pro	Gly	Gly Gly	Val	
2465			2470			2475			
Met Ile	Ala Val	Gln Ala	Ser	Glu Ala	Glu Val	Leu	Pro Leu	Leu	
2480			2485			2490			
Thr Asp	Arg Val	Ser Ile	Ala	Ala Ile	Asn Gly	Pro	Arg Ser	Val	
2495			2500			2505			
Val Ile	Ala Gly	Asp Glu	Ala	Asp Ala	Val Ala	Ile	Val Glu	Ser	
2510			2515			2520			
Phe Thr	Asp Arg	Lys Ser	Lys	Arg Leu	Thr Val	Ser	His Ala	Phe	
2525			2530			2535			
His Ser	Pro His	Met Asp	Gly	Met Leu	Asp Ala	Phe	Arg Glu	Ile	
2540			2545			2550			
Ala Glu	Gly Leu	Ser Tyr	Glu	Ala Pro	Arg Ile	Pro	Val Val	Ser	
2555			2560			2565			
Asn Leu	Thr Gly	Ala Leu	Val	Ser Asp	Glu Met	Gly	Ser Ala	Asp	
2570			2575			2580			
Phe Trp	Val Arg	His Val	Arg	Glu Ala	Val Arg	Phe	Leu Asp	Gly	
2585			2590			2595			
Ile His	Ala Leu	Glu Ala	Ala	Gly Val	Thr Thr	Tyr	Val Glu	Leu	
2600			2605			2610			
Gly Pro	Asp Gly	Val Leu	Ser	Ala Met	Ala Gln	Glu	Cys Val	Thr	
2615			2620			2625			
Gly Glu	Asp Ser	Val Phe	Val	Pro Val	Leu Arg	Ser	Gly Arg	Pro	
2630			2635			2640			
Glu Ala	Glu Ser	Val Thr	Thr	Ala Leu	Ala Gln	Ala	His Val	Arg	
2645			2650			2655			
Gly Ile	Ala Val	Asp Trp	Gln	Ala Tyr	Phe Ala	Gly	Thr Ser	Ala	
2660			2665			2670			
Gln Arg	Val Asp	Leu Pro	Thr	Tyr Arg	Phe Gln	Arg	Glu His	Tyr	
2675			2680			2685			
Trp Pro	Glu Thr	Gly Ile	Pro	Leu Pro	Gly Asp	Thr	Ala Gly	Leu	
2690			2695			2700			
Gly Leu	Ala Ala	Ala Gly	His	Pro Leu	Leu Gly	Ala	Ala Val	Thr	
2705			2710			2715			

Leu Ala	Asp Ala	Asp Gly	Cys Val	Leu Thr	Gly Arg	Leu Ser	Leu
2720			2725			2730	
Arg Thr	His Pro	Trp Leu	Ala Asp	His Ala	Val Met	Gly Ser	Val
2735			2740			2745	
Leu Leu	Pro Gly	Thr Ala	Leu Val	Glu Leu	Ala Leu	His Ala	Gly
2750			2755			2760	
Glu Arg	Val Gly	Thr Arg	Ala Leu	Asp Glu	Leu Thr	Leu Gln	Ala
2765			2770			2775	
Pro Leu	Ile Leu	Pro Asn	Glu Gly	Ala Val	Gln Leu	Gln Val	Val
2780			2785			2790	
Val Gly	Ala Pro	Asp Ala	Ala Gly	His Arg	Thr Val	Ala Val	Tyr
2795			2800			2805	
Ser Arg	Pro Asp	Ala Asp	Gly Glu	Ala Trp	Val Arg	His Ala	Asp
2810			2815			2820	
Gly Leu	Leu Val	Asp Glu	Val Arg	Gly Ala	Ala Ala	Asp Leu	Gly
2825			2830			2835	
Val Trp	Pro Pro	Ala Gly	Ala Thr	Ala Val	Pro Val	Asp Asp	Ala
2840			2845			2850	
Tyr Ala	Ile Leu	Glu Thr	Ser Gly	Leu Ala	Tyr Gly	Pro Leu	Phe
2855			2860			2865	
Gln Gly	Leu Arg	Ala Ala	Trp Arg	Arg Ala	Gly Glu	Leu Phe	Ala
2870			2875			2880	
Glu Leu	Ala Leu	Pro Thr	Glu Ala	Gln Ala	Asp Ala	Ala Ala	Phe
2885			2890			2895	
Gly Leu	His Pro	Ala Leu	Leu Asp	Ser Ala	Leu His	Thr Leu	Ala
2900			2905			2910	
Leu Gly	Asp Leu	Leu Ser	Gly Ala	Asp Ala	Glu Glu	Thr Pro	Gly
2915			2920			2925	
Ala Ala	Arg Leu	Pro Phe	Ala Trp	Arg Gly	Val Arg	Leu His	Ala
2930			2935			2940	
Ala Gly	Ala Pro	Ala Val	Arg Val	Arg Leu	Ala Glu	Ala Gly	Gln
2945			2950			2955	
Gly Ala	Val Ser	Leu Glu	Leu Ala	Asp Ser	Ala Gly	Ala Pro	Val
2960			2965			2970	
Ala Ser	Val Asp	Ser Leu	Val Leu	Arg Ala	Met Ser	Pro Glu	Gln
2975			2980			2985	
Leu Gly	Ala Ala	Ser Ala	Gly Arg	Gln Glu	Ser Leu	Phe Gln	Ile
2990			2995			3000	
Asp Trp	Val Glu	Pro Ala	Ala Asp	Arg Thr	Ala Ala	Ala Thr	Asp
3005			3010			3015	
Val Glu	Arg Ala	Leu Val	Gly Pro	Glu Leu	Arg Gly	Leu Asp	Ala
3020			3025			3030	

Thr Pro Tyr Ala Asp Leu Ala Ala Leu Ala Ala Ala Asp Ser Asp
 3035 3040 3045
 Val Pro Glu Leu Val Phe Ile Thr Thr Arg Ala Glu Ser Glu Pro
 3050 3055 3060
 Glu Gly Leu Pro Gly Thr Val His Val Arg Ala Val Asp Ala Leu
 3065 3070 3075
 Thr His Val Arg Ala Trp Leu Ala Glu Glu Arg Phe Ala Ser Ala
 3080 3085 3090
 Arg Leu Val Phe Val Thr Arg Gly Ala Met Thr Val Gly Ser Asp
 3095 3100 3105
 Glu Ala Val Arg Asp Leu Ala Gly Ala Ala Val Trp Gly Leu Val
 3110 3115 3120
 Arg Ser Ala Gly Thr Glu His Pro Gly Arg Phe Ala Leu Val Asp
 3125 3130 3135
 Leu Asp Asp Asp Asp Val Leu Pro Glu Gln Thr Val Leu Thr Ala
 3140 3145 3150
 Leu Ala Ala Gly Glu Ser Glu Leu Val Val Arg Glu Gly Ser Leu
 3155 3160 3165
 Leu Val Pro Arg Leu Ala Arg Ala Ala Val Val Glu Gly Ser Gly
 3170 3175 3180
 Arg Glu Leu Asp Val Asp Gly Thr Val Leu Val Thr Gly Ala Ser
 3185 3190 3195
 Gly Thr Leu Gly Gly Leu Phe Ala Arg His Leu Val Val Glu Arg
 3200 3205 3210
 Gly Val Arg Arg Leu Leu Leu Val Ser Arg Arg Gly Gly Ala Ala
 3215 3220 3225
 Glu Gly Ala Ala Glu Leu Gly Ala Glu Leu Thr Glu Leu Gly Ala
 3230 3235 3240
 Asp Val Arg Trp Ala Ala Cys Asp Val Ala Asp Arg Glu Ala Leu
 3245 3250 3255
 Glu Ser Val Leu Ala Gly Ile Pro Ala Glu Tyr Pro Leu Ser Gly
 3260 3265 3270
 Val Val His Thr Ala Gly Val Leu Asp Asp Gly Val Val Ser Ser
 3275 3280 3285
 Leu Thr Ala Glu Arg Val Ser Ala Val Leu Arg Pro Lys Val Asp
 3290 3295 3300
 Ala Ala Trp Asn Leu His Glu Leu Thr Arg Gly Leu Asp Leu Ser
 3305 3310 3315
 Leu Phe Val Leu Phe Ser Ser Ala Ala Gly Val Phe Gly Gly Ala
 3320 3325 3330
 Gly Gln Ala Asn Tyr Ala Ala Ala Asn Val Phe Leu Asp Ala Leu
 3335 3340 3345

Ala Gln	His Arg	Arg Ala	Gln Gly	Leu Ala	Ala Thr	Ser Leu	Ala
3350			3355			3360	
Trp Gly	Leu Trp	Ala Glu	Pro Gly	Gly Gly	Met Ala	Gly Ala	Leu Asp
3365			3370			3375	
Ala Asp	Asp Val	Ser Arg	Leu Gly	Arg Gly	Gly Val	Ser Gly	Leu
3380			3385			3390	
Ser Ala	Gly Glu	Gly Val	Ala Leu	Phe Asp	Ala Ala	Ser Ala	Ser
3395			3400			3405	
Glu Gln	Ala Leu	Phe Val	Pro Val	Lys Leu	Asp Leu	Ala Ala	Leu
3410			3415			3420	
Arg Ala	Gln Ala	Gly Ser	Gly Met	Leu Pro	Pro Leu	Leu Ser	Gly
3425			3430			3435	
Leu Val	Arg Thr	Pro Thr	Arg Arg	Ala Ala	Gly Thr	Ala Asn	Ala
3440			3445			3450	
Ala Val	Ser Ala	Pro Gly	Asp Arg	Leu Ala	Gly Leu	Ser Ala	Ala
3455			3460			3465	
Glu Gln	Val Ala	His Val	Leu Glu	Leu Val	Arg Thr	Gln Val	Ala
3470			3475			3480	
Ala Val	Leu Gly	Tyr Ala	Ser Pro	Glu Ala	Val Glu	Lys Asp	Ser
3485			3490			3495	
Ser Phe	Arg Glu	Leu Gly	Phe Asp	Ser Leu	Thr Ala	Val Glu	Leu
3500			3505			3510	
Arg Asn	Leu Leu	Gly Ala	Ala Thr	Gly Leu	Arg Leu	Pro Ala	Thr
3515			3520			3525	
Leu Val	Phe Asp	Tyr Pro	Thr Ser	Ala Val	Leu Ala	Asp His	Leu
3530			3535			3540	
Arg Ser	Glu Leu	Val Gly	Thr Ala	Pro Val	Thr Ser	Ala Pro	Val
3545			3550			3555	
Val Leu	Ala Ala	Arg Asp	Asp Asp	Glu Pro	Ile Ala	Ile Val	Gly
3560			3565			3570	
Leu Gly	Cys Arg	Tyr Pro	Gly Gly	Val Glu	Ser Pro	Asp Asp	Leu
3575			3580			3585	
Trp Arg	Leu Val	Leu Glu	Gly Arg	Asp Ala	Ile Thr	Glu Phe	Pro
3590			3595			3600	
Glu Asp	Arg Gly	Trp Asp	Val Asp	Ala Leu	Phe Asp	Ala Asp	Pro
3605			3610			3615	
Asp Gln	Gln Gly	Thr Ser	Tyr Ala	Arg Glu	Gly Gly	Phe Val	Arg
3620			3625			3630	
Asp Ala	Gly His	Phe Asp	Pro Ala	Phe Phe	Gly Ile	Ser Pro	Arg
3635			3640			3645	
Glu Ala	Val Ala	Met Asp	Pro Gln	Gln Arg	Leu Leu	Leu Glu	Thr
3650			3655			3660	

Ser Trp	Glu Ala Phe Glu Arg	Ala Gly Ile Asp Pro	Ala Ala Leu
3665	3670	3675	
Arg Gly	Ser Arg Thr Gly Val	Phe Ala Gly Val Met	Tyr His Asp
3680	3685	3690	
Tyr Ala	Ser Arg Leu Thr Ala	Leu Pro Glu Gly Val	Glu Gly Phe
3695	3700	3705	
Leu Gly	Thr Gly Asn Ala Ala	Ser Val Ile Ser Gly	Arg Leu Ser
3710	3715	3720	
Tyr Ala	Phe Gly Leu Glu Gly	Pro Ala Ile Thr Val	Asp Thr Ala
3725	3730	3735	
Cys Ser	Ser Ser Leu Val Ala	Leu His Leu Ala Val	Gln Ala Leu
3740	3745	3750	
Arg Asn	Gly Glu Cys Ser Leu	Ala Leu Ala Gly Gly	Val Thr Val
3755	3760	3765	
Met Ala	Thr Pro Ala Ala Phe	Val Glu Phe Ser Arg	Gln Arg Gly
3770	3775	3780	
Leu Ala	Ala Asp Gly Arg Cys	Lys Ala Phe Ser Ala	Gly Ala Asp
3785	3790	3795	
Gly Thr	Gly Trp Ser Glu Gly	Ala Gly Val Leu Leu	Val Glu Arg
3800	3805	3810	
Leu Ser	Asp Ala Arg Arg Asn	Gly His Pro Val Leu	Ala Val Val
3815	3820	3825	
Arg Gly	Ser Ala Ile Asn Gln	Asp Gly Ala Ser Asn	Gly Leu Thr
3830	3835	3840	
Ala Pro	Asn Gly Pro Ser Gln	Gln Arg Val Ile Arg	Gln Ala Leu
3845	3850	3855	
Ala Ser	Ala Gly Leu Ser Ala	Ala Asp Val Asp Val	Val Glu Ala
3860	3865	3870	
His Gly	Thr Gly Thr Thr Leu	Gly Asp Pro Ile Glu	Ala Gln Ala
3875	3880	3885	
Leu Leu	Ala Thr Tyr Gly Gln	Glu His Thr Asp Glu	Gln Pro Leu
3890	3895	3900	
Leu Leu	Gly Ser Ile Lys Ser	Asn Phe Gly His Thr	Gln Ala Ala
3905	3910	3915	
Ala Gly	Val Ala Gly Ile Ile	Lys Ile Val Gln Ala	Met Arg His
3920	3925	3930	
Gly Val	Val Pro Lys Thr Leu	His Val Asp Glu Pro	Thr Pro His
3935	3940	3945	
Val Asp	Trp Ser Ala Gly Ala	Val Ser Leu Leu Thr	Glu Gln Val
3950	3955	3960	
Ala Trp	Pro Glu Thr Gly Arg	Pro Arg Arg Ala Ala	Ile Ser Ser
3965	3970	3975	

Phe Gly Phe Ser Gly Thr Asn Ala His Ala Ile Ile Glu Gln Ala
 3980 3985 3990
 Pro Asp Pro Ala Pro Glu Asp Leu Pro Asp Ala Gly Pro Asp Val
 3995 4000 4005
 Arg Pro Glu Pro Ala Arg Thr Pro Gly Ser Leu Pro Trp Leu Leu
 4010 4015 4020
 Ser Ala Lys Gly Ala Asp Ala Leu Arg Asp Gln Ala Ala Arg Leu
 4025 4030 4035
 Arg Ala His Ala Ile Gly His Pro Glu Leu Ser Leu Ala Asp Ile
 4040 4045 4050
 Gly Tyr Ala Leu Ala Thr Ser Arg Thr Ala Leu Asp Arg Arg Ala
 4055 4060 4065
 Ala Val Val Ala Gly Asp Arg Glu Glu Phe Leu Ala Gly Leu Ala
 4070 4075 4080
 Ala Leu Ala Glu Gly Ala Thr Ala Ala Gly Leu Thr Glu Gly Ser
 4085 4090 4095
 Pro Ala Gly Gly Lys Leu Ala Phe Leu Phe Thr Gly Gln Gly Ser
 4100 4105 4110
 Gln Arg Leu Ala Met Gly Arg Glu Leu Tyr Ser Ala His Pro Val
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 Phe Ala Arg Ala Leu Asp Ala Val Cys Asp Gly Leu Ala Leu Asp
 4130 4135 4140
 Val Pro Leu Lys Gln Val Leu Phe Gly Ser Asp Ala Asp Leu Leu
 4145 4150 4155
 Asp Arg Thr Ala Tyr Thr Gln Pro Ala Leu Phe Ala Val Glu Val
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 Ala Leu Phe Arg Leu Val Glu Ser Trp Gly Leu Lys Pro Asp Phe
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 Leu Ala Gly His Ser Ile Gly Glu Ile Thr Ala Ala His Val Ala
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 Gly Arg Leu Met Gln Ala Leu Pro Thr Gly Gly Val Met Ile Ala
 4220 4225 4230
 Val Glu Ala Ser Glu Asp Glu Val Leu Pro Leu Leu Thr Asp Arg
 4235 4240 4245
 Val Ser Ile Ala Ala Ile Asn Gly Pro Gln Ser Val Val Ile Ala
 4250 4255 4260
 Gly Asp Glu Ala Asp Ala Val Ala Ile Ala Glu Ser Phe Thr Gly
 4265 4270 4275
 Arg Lys Ser Lys Arg Leu Thr Val Ser His Ala Phe His Ser Pro
 4280 4285 4290

His Met Asp Gly Met Leu Asp Ala Phe Arg Glu Val Ala Glu Gly
 4295 4300 4305
 Leu Ser Tyr Gly Thr Pro Leu Ile Pro Val Val Ser His Leu Thr
 4310 4315 4320
 Gly Thr Leu Val Thr Asp Glu Met Arg Ser Pro Asp Phe Trp Val
 4325 4330 4335
 Arg His Val Arg Glu Ala Val Arg Phe Leu Asp Gly Ile Arg Thr
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 Leu Glu Asp Ala Gly Val Thr Thr Tyr Ile Glu Leu Gly Pro Gly
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 Gly Val Leu Ser Ala Met Gly Gln Ser Cys Val Thr Arg Asp Asp
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 Ala Ala Phe Leu Pro Ala Leu Arg Ala Asp Arg Ser Glu Glu Glu
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 Thr Leu Thr Ser Ala Val Ala Arg Ala His Leu Arg Gly Ile Thr
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 Val Asp Trp Asp Ala Tyr Tyr Ser Gly Thr Gly Ala Arg Arg Val
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 Asp Leu Pro Thr Tyr Ala Phe Gln Arg Gln Arg Tyr Trp Leu Glu
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 Pro Gly Ala Ala Leu Leu Glu Leu Ala Val Arg Ala Gly Asp His
 4505 4510 4515
 Ala Gly Cys Asp Leu Leu Glu Asp Leu Thr Leu Glu Ala Pro Leu
 4520 4525 4530
 Val Leu Pro Glu Ala Gly Gly Val Gln Leu Arg Leu Val Val Ala
 4535 4540 4545
 Glu Pro Asp Ala Ser Arg Arg Arg Val Phe His Ile Tyr Ser Arg
 4550 4555 4560
 Pro Glu Asp Ala Ala Phe Glu Glu Pro Trp Thr Arg His Ala Gly
 4565 4570 4575
 Gly Val Leu Ala Val Glu Gly Ala His Pro Ala Glu Ala Glu Ser
 4580 4585 4590
 Glu Trp Pro Pro Ala Gly Ala Val Pro Cys Pro Val Glu Asp Leu
 4595 4600 4605

Tyr Pro	Ser Leu Asp Ala Ile	Gly Leu Gly Tyr Gly	Pro Ala Phe
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Arg Asn	Leu Leu Leu Ala Trp	Lys Arg Gly Asp Glu	Val Phe Ala
4625	4630	4635	
Glu Val	Ala Leu Gly Glu Asp	Arg Arg Thr Glu Gly	Ala Leu Tyr
4640	4645	4650	
Gly Leu	His Pro Ala Leu Leu Asp	Ala Ala Leu His	Ala Val Gly
4655	4660	4665	
Leu Gly	Asp Phe Phe Pro Asp	Gly Pro Glu Gly Ala	Arg Leu Pro
4670	4675	4680	
Phe Ser	Trp Asp Gly Val Arg	Leu His Ala Val Gly	Ala Ala Ala
4685	4690	4695	
Leu Arg	Val Arg Met Ala Pro	Ala Gly Gln Asp Ala	Val Thr Leu
4700	4705	4710	
Ala Val	Ser Asp Glu Thr Gly	Arg Pro Val Leu Thr	Val Asp Ser
4715	4720	4725	
Leu Val	Leu Arg Pro Leu Ala	Leu Asp Gly Pro Gly	Gly Leu Gly
4730	4735	4740	
Gly Ala	Gly Arg Gly Pro Gly	Ser Val Arg Asp Ala	Leu Phe Gln
4745	4750	4755	
Val Asp	Trp His Ala Leu Pro	Leu Pro Glu Ala Gln	Ser Pro Ala
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Glu Gly	Arg Trp Ala Leu Leu	Gly Gly Asp Pro Leu	Lys Leu Ala
4775	4780	4785	
Ala Ala	Leu Glu Arg Thr Gly	Val Leu Glu Pro Gly	Ala Leu Phe
4790	4795	4800	
Gly Thr	Ala Ser Glu Asp Thr	Gly Gly His Pro Arg	Asp Leu Ser
4805	4810	4815	
Ala Leu	Ala Asp Ala Val Glu	Leu Ala Glu Ala Leu	Gly Glu Pro
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Ala Pro	Glu Thr Val Leu Val	Ser Leu Ala Pro Asp	Leu Ala Ala
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Thr Gly	Gly Leu Ala Ser Ala	Ala His Arg Ala Ala	Ala Asp Ala
4850	4855	4860	
Leu Glu	Leu Ile Gln Ala Trp	Leu Ala Asp Glu Arg	Leu Ala Gly
4865	4870	4875	
Ser Arg	Leu Ala Leu Val Thr	Arg Gly Ala Val Ala	Thr Asp Pro
4880	4885	4890	
Asp Ala	Asp Val Asp Asp Leu	Ala His Ala Ala Val	Trp Gly Leu
4895	4900	4905	
Val Arg	Ser Ala Gln Ala Glu	His Pro Gly Arg Leu	Val Leu Val
4910	4915	4920	

Asp Leu Asp Asp Glu Asp Asp Ser Tyr Arg Ala Leu Pro Ala Ala
 4925 4930 4935
 Leu Asp Thr Asp Glu Thr Gln Leu Ala Val Arg Asp Gly Ala Val
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 Ala Ala Ala Pro Asp Val Ala Pro Asp Pro Glu Gly Thr Val Leu
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 Ile Thr Gly Ala Ser Gly Thr Leu Gly Gly Leu Leu Ala Arg His
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 Val Thr Leu Gly Ala Gln Val Thr Trp Ala Ala Cys Asp Ala Ala
 5030 5035 5040
 Asp Arg Asp Ala Leu Ala Ala Leu Leu Glu Ser Val Pro Ala Ala
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 His Pro Leu Thr Ala Val Val His Thr Ala Gly Val Leu Asp Asp
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 Gly Thr Val Glu Ser Leu Thr Ala Gly Arg Met Ala Thr Val Leu
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 Arg Pro Lys Val Asp Ala Ala Trp Asn Leu His Glu Leu Thr His
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 Gly Leu Asp Leu Ala Ala Phe Val Leu Phe Ser Ser Ala Ala Gly
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 Val Phe Gly Asn Ala Gly Gln Ala Asn Tyr Ala Ala Gly Asn Thr
 5120 5125 5130
 Phe Leu Asp Ala Leu Ala Gln His Arg Arg Ala Gln Gly Leu Thr
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 Ala Val Ser Leu Ala Trp Gly Leu Trp Asp Asp Glu Ala Gly Met
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 Ala Ala Thr Leu Asp Glu Gln Asp Arg Arg Arg Leu Ser Arg Gly
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 Ser Met Asn Pro Leu Ser Val Ala Glu Gly Leu Ala Leu Phe Asp
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 Val Leu Gln Ala Gln Val Gly Asp Leu Val Pro Pro Leu Leu Arg
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Gly Leu Leu Arg Thr Pro Val Arg Arg Arg Ala Ser Gly Ala Ala
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 Pro Ala Glu Arg Asp Arg Val Leu Leu Asp Leu Val Cys Thr Gln
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 Glu Leu Arg Asn Arg Leu Gly Ala Val Thr Gly Leu Arg Leu Pro
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 Ala Thr Leu Ile Phe Asp Tyr Pro Thr Pro Glu Ala Leu Ser Gly
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 His Leu Arg Ser Ala Leu Pro Leu Asp Glu Asp Gly Pro Ser Val
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 Phe Ser Glu Leu Asp Arg Leu Glu Ser Ala Leu Gly Ala Ala Asp
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 Ala Asp Ser Val Thr Arg Ser Arg Ile Thr Met Arg Leu Gln Ala
 5375 5380 5385
 Leu Met Thr Lys Trp Asn Asp Ala Gln Asp Ala Asn Gly Gly Ala
 5390 5395 5400
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 cacggccggg acgccgtctc gcctacccc acggaccgcg gctgggacgc cgaagtcctc 240
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<213> *Streptomyces aizunensis*

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 Val Arg Ser Pro Glu Asp Leu Trp Arg Leu Val Glu Asn Gly Asp Asp
 50 55 60
 Ala Val Ser Gly Phe Pro Val Asp Arg Gly Trp Asp Val Glu Ala Leu
 65 70 75 80
 Tyr Asp Ala Asp Pro Asp Ser Ser Gly Ser Ser Tyr Val Ser Glu Gly
 85 90 95
 Gly Phe Leu Tyr Asp Ala Ala Ser Phe Asp Pro Ala Pro Phe Gly Ile
 100 105 110
 Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu
 115 120 125
 Glu Ala Ser Trp Glu Ala Phe Glu Arg Ala Gly Ile Asp Pro Ser Ser
 130 135 140
 Val Arg Gly Ser Arg Thr Ala Val Phe Ala Gly Val Met Tyr His Asp
 145 150 155 160
 Tyr Thr Ala Arg Leu Asp Ser Val Pro Glu Gly Val Glu Gly Phe Leu
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Gly Thr Gly Ser Ser Gly Ser Ile Ala Ser Gly Arg Val Ala Tyr Thr
 180 185 190
 Phe Gly Leu Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser
 195 200 205
 Ser Leu Val Thr Leu His Leu Ala Val Gln Ala Leu Arg Ala Gly Glu
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 Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val Met Ala Thr Pro Ala
 225 230 235 240
 Thr Phe Thr Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg
 245 250 255
 Cys Lys Pro Phe Ala Ala Ala Ala Asp Gly Thr Gly Trp Gly Glu Gly
 260 265 270
 Val Gly Met Leu Leu Val Glu Arg Leu Ser Asp Ala Gln Arg Asn Gly
 275 280 285
 His Pro Ile Leu Ala Val Val Arg Gly Ser Ala Ile Asn Gln Asp Gly
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 Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val
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 Ile His Gln Ala Leu Thr Asn Ala Arg Leu Ser Ala Ala Asp Val Asp
 325 330 335
 Val Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu
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 Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Asp Arg Pro Ala Gly Arg
 355 360 365
 Pro Leu Leu Leu Gly Ser Ile Lys Ser Asn Ile Gly His Thr Gln Ala
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 Ala Ala Gly Val Ala Ser Ile Ile Lys Met Val Glu Ala Met Arg His
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 Gly Val Val Pro Lys Thr Leu His Leu Asp Glu Pro Thr Pro His Val
 405 410 415
 Asp Trp Glu Ala Gly Ala Val Ser Leu Ile Gly Glu Lys Ile Ala Trp
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 Pro Glu Thr Gly Glu Leu Arg Arg Ala Gly Val Ser Ser Phe Gly Phe
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 Ser Gly Thr Asn Ala His Val Ile Val Glu Gln Ala Pro Val Val Glu
 450 455 460
 Glu Val Ala Gly Asp Pro Ala Gly Glu Val Glu Gly Ser Glu Leu Ala
 465 470 475 480
 Val Val Pro Trp Val Leu Ser Gly Lys Ser Ala Gly Ala Leu Arg Ala
 485 490 495
 Gln Ala Glu Arg Leu Ser Gly Trp Leu Ala Gly Ala Ser Ala Ala Gly
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Val Ala Ser Val Asp Val Gly Trp Ser Leu Ala Ser Ser Arg Ala Gly
515 520 525

Leu Glu His Arg Ala Val Val Leu Gly Asp His Ala Ala Gly Val Gly
530 535 540

Ala Val Ala Ser Gly Val Met Ala Ala Gly Val Val Thr Gly Ser Val
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Val Gly Gly Lys Thr Ala Phe Val Phe Pro Gly Gln Gly Ser Gln Trp
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Val Gly Met Ala Val Gly Leu Leu Asp Ser Ser Pro Val Phe Ala Ala
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Arg Val Asp Glu Cys Ala Lys Ala Leu Glu Pro Phe Thr Asp Trp Ser
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Leu Val Asp Val Leu Arg Gly Val Glu Gly Ala Pro Ser Leu Glu Arg
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Val Asp Val Val Gln Pro Ala Leu Phe Ala Val Met Val Ser Leu Ala
625 630 635 640

Glu Val Trp Arg Ala Ala Gly Val Arg Pro Gly Ala Val Ile Gly His
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Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ala Gly Ile Leu Ser Leu
660 665 670

Glu Asp Ala Ala Arg Val Val Ala Leu Arg Ser Gln Ala Ile Gly Arg
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Val Leu Ala Gly Leu Gly Gly Met Val Ser Val Pro Leu Pro Ala Lys
690 695 700

Ala Val Arg Glu Leu Ile Ala Pro Trp Gly Glu Gly Arg Ile Ser Val
705 710 715 720

Ala Ala Val Asn Gly Pro Ser Ser Val Val Val Ser Gly Glu Ala Ala
725 730 735

Ala Leu Asp Glu Met Leu Ala Ser Cys Glu Ser Glu Gly Val Arg Ala
740 745 750

Lys Arg Ile Ala Val Asp Tyr Ala Ser His Ser Ala Gln Val Glu Leu
755 760 765

Leu Arg Glu Glu Leu Ala Glu Leu Leu Ala Pro Ile Val Pro Arg Ala
770 775 780

Ala Glu Val Pro Phe Leu Ser Thr Val Thr Gly Glu Trp Val Arg Gly
785 790 795 800

Pro Glu Leu Asp Ala Gly Tyr Trp Phe Gln Asn Leu Arg Arg Thr Val
805 810 815

Glu Leu Glu Glu Ala Thr Arg Thr Leu Leu Glu Gln Gly Phe Gly Val
820 825 830

Phe Val Glu Ser Ser Pro His Pro Val Leu Ser Val Gly Met Gln Glu
835 840 845

Thr Val Glu Asp Ala Gly Arg Glu Ala Ala Val Leu Gly Ser Leu Arg
 850 855 860
 Arg Gly Glu Gly Gly Leu Glu Arg Phe Trp Leu Ser Leu Gly Glu Ala
 865 870 875 880
 Trp Val Arg Gly Val Ala Val Asp Trp His Ala Val Phe Ala Gly Thr
 885 890 895
 Gly Ala Arg Arg Val Asp Leu Pro Thr Tyr Ala Phe Gln Gln Glu His
 900 905 910
 Tyr Trp Leu Glu Ser Gly Thr Ala Glu Asp Val Thr Ala Thr Ala His
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 Pro Val Asp Ala Val Glu Ala Arg Phe Trp Glu Ala Val Glu Arg Gln
 930 935 940
 Asp Val Ala Ala Leu Thr Ala Glu Leu Asp Val Asp Glu Asn Glu Asn
 945 950 955 960
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 Glu Arg Ser Ala Val Asp Gly Trp Arg Tyr Arg Val Thr Trp Lys Pro
 980 985 990
 Ala Pro Glu Pro Thr Thr Ala Arg Leu Ser Gly Thr Trp Leu Val Ala
 995 1000 1005
 Val Ala Glu Gly Ala Pro Gly Asp Glu Trp Thr Ser Ala Val Leu
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 Arg Thr Leu Ala Glu His Gly Ala Asp Val Arg Gln Ile Thr Val
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 Ala Arg Thr Glu Asp Thr Arg Ala Gly Leu Ala Glu Arg Ile Arg
 1040 1045 1050
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 1070 1075 1080
 Gly Gly Val Ile Thr Thr Leu Ser Leu Val Gln Ala Leu Gly Asp
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Glu Asp Gln Val Ala Val Arg Ala Ser Gly Leu Phe Val Arg Arg
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 Gln Ile Glu Arg Val Leu Arg Val Lys Val Asp Ala Thr Leu His
 1310 1315 1320
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 1385 1390 1395
 Arg His Gly Val Ile Glu Met Ser Pro Glu Arg Ala Val Ala Ala
 1400 1405 1410
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 Ala Arg Pro Leu Leu His Asp Leu Pro Glu Ala Arg Glu Val Met
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Gly Tyr	Ala Gly	Pro Asp	Ala	Val Glu	Ala Gly	Arg	Ala Phe	Lys	
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Glu Leu	Gly Phe	Asp Ser	Leu	Thr Ser	Val Glu	Leu	Arg Asn	Arg	
1520			1525			1530			
Leu Asn	Ala Ala	Ser Gly	Leu	Lys Leu	Pro Pro	Thr	Leu Val	Phe	
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Phe Phe	Gly Gln	Gly Ala	Ala	Ala Ala	Val Pro	Val	Pro Met	Ala	
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Ala Met	Asp Pro	Gln Gln	Arg	Leu Leu	Leu Glu	Thr	Ser Trp	Glu	
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1685			1690			1695			
Gln Ser	Gly Val	Phe Val	Gly	Thr Asn	Gly Ser	Asp	Tyr Ser	Asn	
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1745			1750			1755			
Ser Leu	Val Ala	Leu His	Leu	Ala Val	Gln Ala	Leu	Arg Ser	Gly	
1760			1765			1770			
Glu Cys	Ser Leu	Ala Leu	Ala	Gly Gly	Val Thr	Val	Met Ser	Thr	
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Pro Gly	Thr Phe	Ile Glu	Phe	Ser Arg	Gln Arg	Gly	Leu Ser	Thr	
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Asp Gly 1805	Arg Cys Lys Ala	Phe 1810	Ser Ser Asp Ala Asp	Gly Phe Ser 1815
Pro Ala 1820	Glu Gly Val Gly	Val 1825	Leu Leu Val Glu Arg	Leu Ser Asp 1830
Ala Arg 1835	Arg Asn Gly His	Pro 1840	Ile Leu Ala Val Val	Arg Gly Ser 1845
Ala Ile 1850	Asn Gln Asp Gly	Ala 1855	Ser Asn Gly Leu Thr	Ala Pro Asn 1860
Gly Pro 1865	Ser Gln Gln Arg	Val 1870	Ile Arg Gln Ala Leu	Ala Asn Ala 1875
Arg Leu 1880	Ser Ala Ala Asp	Val 1885	Asp Val Val Glu Ala	His Gly Thr 1890
Gly Thr 1895	Thr Leu Gly Asp	Pro 1900	Ile Glu Ala Gln Ala	Leu Leu Ala 1905
Thr Tyr 1910	Gly Gln Asp Arg	Pro 1915	Ala Gly Arg Pro Leu	Leu Leu Gly 1920
Ser Ile 1925	Lys Ser Asn Ile	Gly 1930	His Ala Gln Ala Ala	Ala Gly Val 1935
Ala Gly 1940	Val Met Lys Met	Val 1945	Leu Ala Met Gln His	Gly Val Leu 1950
Pro Gln 1955	Ser Leu His Ile	Ala 1960	Glu Pro Thr Pro His	Val Asp Trp 1965
Ser Ala 1970	Gly Glu Val Ala	Leu 1975	Leu Thr Glu Glu Arg	Ala Trp Pro 1980
Glu Thr 1985	Gly Arg Pro Trp	Arg 1990	Ala Gly Val Ser Ser	Phe Gly Phe 1995
Ser Gly 2000	Thr Asn Ala His	Ala 2005	Ile Ile Glu Gln Ala	Pro Ala Glu 2010
Ala Gly 2015	Ser Asp Asp Asp	Arg 2020	Glu Thr Pro Glu Pro	Ser Ala Gln 2025
Pro Leu 2030	Leu Val Ala Pro	Thr 2035	Arg Asp Asp Ser Ala	Ser Ala Arg 2040
Asp Asp 2045	Ser Ala Ser Ala	Pro 2050	Asp Gly Ser Val Ser	Gly Pro Asp 2055
Asp Ser 2060	Val Ser Asp Arg	Pro 2065	Gly Val Leu Pro Trp	Thr Leu Thr 2070
Ala Lys 2075	Thr Glu Lys Ala	Leu 2080	Gln Gly Gln Ala Glu	Arg Leu Leu 2085
Thr Gln 2090	Leu Thr Thr Arg	Ser 2095	Asp Leu Arg Leu Val	Asp Val Gly 2100
His Ser 2105	Leu Ala Thr Thr	Arg 2110	Thr Ala Leu Asp Gln	Arg Ala Val 2115

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 Gly Val Phe Val Glu Ser Ser Pro His Pro Val Leu Thr Met Gly
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Ser Leu	Gly Glu Ala Trp	Val Arg Gly Val Gly	Val Asp Trp Ser		
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Ala Val	Phe Ala Gly Thr	Gly Ala Arg Arg Val	Asp Leu Pro Thr		
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Gly Trp	Arg Tyr Arg Val	Thr Trp Lys Pro Leu	Ala Glu Ala Lys		
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Thr Ser	Arg Leu Ser Gly	Thr Trp Leu Val Val	Val Pro Glu Asn		
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Gly Pro	Ala Asp Glu Trp	Thr Gly Ala Val Leu	Arg Val Leu Ala		
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Asp Arg	Gly Ala Glu Val	Arg Thr Val Thr Val	Pro Ala Asp Gly		
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Ala Asp	Arg Asp Arg Leu	Ala Ala Thr Leu Lys	Ala Glu Thr Asp		
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Gly Ala	Ala Pro Ala Gly	Val Leu Ser Leu Leu	Ala Leu Ala Val		
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Glu Ser	Ala Glu Leu Arg	Thr His Thr Gly Leu	Leu Ala Thr Ala		
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Ala Leu	Val Gln Ala Leu	Gly Asp Ala Asp Val	Ala Ala Pro Leu		
2675		2680	2685		
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Leu Gln	Asp Pro Ala Gln	Ala Leu Val Ser Gly	Phe Gly Arg Thr		
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Val Ala	Leu Glu Tyr Pro	Asp Arg Trp Gly Gly	Leu Val Asp Leu		
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Pro Glu	Gln Ala Asp Gly	Arg Thr Leu Glu Arg	Leu Ala Gly Val		
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 Ala Gly Gly Asp Ser Pro Ala Glu Ala Leu Arg Arg Arg Leu Ala
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Arg Ser His Ala Ala Thr Ala Leu Gly His Pro Thr Thr Asp Glu
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Gly Ala Ala Pro Gly Ile Thr Glu Leu Glu Lys Leu Glu Ser Ala
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Leu Ser Val Leu Asp Pro Asp Ser Glu Thr Arg Thr Asp Ile Ala
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3185 3190 3195

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<212> DNA

<213> *Streptomyces aizunensis*

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Val	Ser	Asn	Leu	Thr	Gly	Ala	Ser	Val	Thr	Ala	Glu	Glu	Ile	Cys	Ala				
			820					825						830					
Ala	Asp	Tyr	Trp	Val	Arg	His	Val	Arg	Glu	Ala	Val	Arg	Phe	Leu	Asp				
	835						840						845						
Gly	Val	Arg	Lys	Leu	Ser	Ala	Gln	Gly	Val	Thr	Thr	Phe	Val	Glu	Val				
	850					855						860							
Gly	Pro	Gly	Gly	Val	Leu	Thr	Ala	Leu	Ala	Gln	Glu	Cys	Val	Thr	Gly				
	865					870					875				880				
Gln	Asp	Ala	Val	Phe	Val	Pro	Val	Leu	Arg	Gly	Asp	Arg	Pro	Glu	Ala				
				885					890					895					
Ala	Ala	Phe	Ala	Thr	Ala	Val	Ala	Gln	Ala	His	Val	His	Gly	Val	Ala				
			900					905						910					
Val	Asp	Trp	Ser	Ala	Val	Phe	Ala	Gly	Arg	Gly	Ala	Thr	Arg	Ile	Asp				
	915					920							925						
Leu	Pro	Thr	Tyr	Ala	Phe	Gln	Arg	Glu	Leu	Tyr	Trp	Pro	Glu	Gln	Pro				
	930					935					940								
Thr	Ala	Trp	Ala	Gly	Asp	Val	Thr	Ala	Ala	Gly	Ile	Gly	Ala	Ala	Asp				
	945					950					955				960				
His	Pro	Leu	Leu	Gly	Ala	Ala	Ile	Ala	Leu	Ala	Asp	Gly	Asp	Gly	His				
				965					970					975					
Leu	Phe	Thr	Gly	Arg	Leu	Ser	Leu	Ala	Thr	His	Pro	Trp	Leu	Ala	Asp				
			980					985					990						
His	Thr	Val	Met	Asp	Thr	Val	Leu	Leu	Pro	Gly									

1040	1045	1050
Arg Ser Leu Thr Leu His Ser 1055	Arg Pro Glu Asp Ala 1060	Ala Asp Asp 1065
Thr Trp Gly Glu Gly Ala Trp 1070	Thr Arg His Ala Thr 1075	Gly Phe Leu 1080
Ala Thr Ala Ala Gln Gly Ala 1085	Arg Glu Pro Leu Ala 1090	Asp Leu Thr 1095
Ser Trp Pro Pro Lys Asn Ala 1100	Thr Lys Val Asp Val 1105	Glu Gly Leu 1110
Tyr Ala Tyr Leu Thr Glu Ser 1115	Gly Phe Ala Tyr Gly 1120	Pro Val Phe 1125
Gln Gly Leu Thr Gly Ala Trp 1130	Gln Arg Gly Asp Glu 1135	Val Phe Ala 1140
Glu Val Arg Leu Pro Glu Gln 1145	Ala His Ala Glu Ala 1150	Ala Leu Phe 1155
Gly Leu His Pro Ala Leu Leu 1160	Asp Ala Ala Leu His 1165	Ala Val Gly 1170
Ile Gly Ser Leu Leu Glu Asp 1175	Thr Glu His Gly Arg 1180	Leu Pro Phe 1185
Ser Trp Ser Gly Val Ser Leu 1190	Arg Ala Val Gly Ala 1195	Arg Ala Leu 1200
Arg Val Arg Leu Ala Pro Ala 1205	Gly Asn Asp Thr Val 1210	Ser Val Thr 1215
Leu Ala Asp Glu Thr Gly Ala 1220	Pro Val Ala Ala Val 1225	Asp Ala Leu 1230
Leu Leu Arg Pro Val Ser Pro 1235	Asp Gln Val His Ala 1240	Ala Arg Thr 1245
Ala Phe His Asp Ser Leu Phe 1250	Arg Val Glu Trp Thr 1255	Gly Thr Pro 1260
Leu Pro Ala Ala Thr Thr Val 1265	Ala Ala Gly Gln Trp 1270	Ala Leu Leu 1275
Gly Glu Pro Arg Thr Glu Phe 1280	Thr Ala Ala Leu Pro 1285	Thr Ala Ala 1290
Thr His Ala Asp Leu Ala Ala 1295	Leu Gly Ala Ala Leu 1300	Asp Ala Gly 1305
Gly Pro Val Pro Arg Ala Val 1310	Ile Val Pro Phe Ser 1315	Ala Ser Gly 1320
Ala Pro Ser Ala Thr Pro Val 1325	Asp Ala Ala Leu Pro 1330	Thr Ala Val 1335
Ala Asp Ala Leu His Arg Thr 1340	Leu Glu Leu Ala Gln 1345	Ala Trp Leu 1350
Ala Asp Asp Arg Phe Ala Gly	Ser Arg Leu Val Phe	Val Thr Arg

1355					1360					1365				
Asp	Ala	Val	Ala	Thr	Thr	Ala	Gly	Ser	Asp	Val	Ala	Asp	Leu	Ala
1370						1375							1380	
His					Ala					Pro				
1385					1390									
Pro					Asp					Leu				
1400					1405									
Leu					Arg					Ala				
1415					1420									
Ala					Leu					Val				
1430					1435									
Ala					Ala					Pro				
1445					1450									
Thr					Ala					Thr				
1460					1465									
Ala					Arg					His				
1475					1480									
Thr					Ser					Arg				
1490					1495									
Ala					Gly					Leu				
1505					1510									
Asp					Ala					Leu				
1520					1525									
Pro					Ala					Val				
1535					1540									
Leu					Asp					Gly				
1550					1555									
Ala					Val					His				
1565					1570									
Leu					Thr					Phe				
1580					1585									
Ala					Ala					Gly				
1595					1600									
Ala					Asn					Tyr				
1610					1615									
Gly					Leu					Trp				
1625					1630									
Ser					Ala					Asp				
1640					1645									
Ser					Arg					Ala				
1655					1660									
Leu					Val					Thr				

1670	1675	1680
Met His Leu Asp Leu Ala Ser 1685	Leu Arg His Ala Asp 1690	Ala Ser Met 1695
Val Pro Ala Leu Leu Arg Gly 1700	Leu Val Arg Ala Pro 1705	Ala Arg Arg 1710
Ser Val Glu Ser Pro Gly Ala 1715	Ala Pro Ala Gly Gly 1720	Leu Ala Glu 1725
Arg Leu Leu Pro Leu Thr Ala 1730	Ala Glu Arg Asp Arg 1735	Leu Leu Leu 1740
Asp Thr Val Arg Val Gln Val 1745	Ala Ala Val Leu Gly 1750	Tyr Pro Gly 1755
Pro Glu Ala Val Asp Pro Gly 1760	Arg Ala Phe Lys Glu 1765	Leu Gly Phe 1770
Asp Ser Leu Thr Ala Val Glu 1775	Leu Arg Asn Arg Leu 1780	Gly Ser Ala 1785
Thr Gly Val Arg Leu Pro Ala 1790	Thr Leu Val Phe Asp 1795	Tyr Pro Thr 1800
Pro Asn Ala Leu Ser Ala Phe 1805	Leu Arg Thr Glu Leu 1810	Leu Gly Asp 1815
Ala Ala Asp Ser Ala Pro Val 1820	Ala Ala Val Thr Ala 1825	Arg Asp Asp 1830
Glu Pro Ile Ala Ile Val Gly 1835	Met Ser Cys Arg Tyr 1840	Pro Gly Gly 1845
Val Thr Thr Pro Glu Glu Leu 1850	Trp Gln Leu Val Ala 1855	Gly Ser Val 1860
Asp Ala Ile Ser Pro Phe Pro 1865	Thr Asp Arg Gly Trp 1870	Asn Leu Asp 1875
Ala Leu Tyr Asp Ala Asp Pro 1880	Gly Arg Ala Gly Thr 1885	Ser Tyr Thr 1890
Arg Glu Gly Gly Phe Leu His 1895	Asp Ala Ala Asp Phe 1900	Asp Pro Asp 1905
Val Phe Gly Ile Asn Pro Arg 1910	Glu Ala Leu Ala Met 1915	Asp Pro His 1920
Gln Arg Leu Leu Leu Glu Thr 1925	Ser Trp Glu Ala Phe 1930	Glu Gln Ala 1935
Gly Ile Ala Pro Ser Ser Met 1940	Arg Gly Ser Arg Thr 1945	Gly Val Phe 1950
Ala Gly Val Met Tyr His Asp 1955	Tyr Leu Thr Arg Leu 1960	Pro Ala Val 1965
Pro Glu Gly Leu Glu Gly Tyr 1970	Leu Gly Thr Gly Thr 1975	Ala Gly Ser 1980
Val Ala Ser Gly Arg Ile Ser	Tyr Thr Phe Gly Leu	Glu Gly Pro

1985					1990					1995				
Ala Val	Thr Val	Asp Thr	Ala Cys	Ser Ser Ser	Leu Val	Ala Leu								
2000			2005		2010									
His Leu	Ala Ala	Gln Ala	Leu Arg	Asn Gly Glu	Cys Asp	Met Ala								
2015			2020		2025									
Leu Ala	Gly Gly	Val Thr	Val Met	Ser Thr Pro	Asp Thr	Phe Ile								
2030			2035		2040									
Asp Phe	Ser Arg	Gln Arg	Gly Leu	Ser Gly Asn	Gly Arg	Cys Lys								
2045			2050		2055									
Ser Phe	Ser Ala	Asp Ala	Asp Gly	Thr Gly Trp	Ala Glu	Gly Ala								
2060			2065		2070									
Gly Met	Ile Leu	Val Glu	Arg Leu	Ser Asp Ala	Arg Arg	Asn Gly								
2075			2080		2085									
His Gln	Val Leu	Ala Val	Val Arg	Gly Thr Ala	Val Asn	Gln Asp								
2090			2095		2100									
Gly Ala	Ser Asn	Gly Leu	Thr Ala	Pro Asn Gly	Pro Ser	Gln Gln								
2105			2110		2115									
Arg Val	Ile Arg	Gln Ala	Leu Ala	Asn Ala Gly	Leu Thr	Thr Ala								
2120			2125		2130									
Glu Val	Asp Val	Val Glu	Ala His	Gly Thr Gly	Thr Thr	Leu Gly								
2135			2140		2145									
Asp Pro	Ile Glu	Ala Gln	Ala Leu	Leu Ala Thr	Tyr Gly	Gln Asp								
2150			2155		2160									
Arg Pro	Ala Gly	Gln Pro	Leu Arg	Leu Gly Ser	Ile Lys	Ser Asn								
2165			2170		2175									
Ile Gly	His Thr	Gln Ala	Ala Ala	Gly Ala Ala	Gly Ile	Ile Lys								
2180			2185		2190									
Met Ile	Leu Ala	Met Arg	His Gly	Val Met Pro	Pro Ser	Leu His								
2195			2200		2205									
Ile Gly	Glu Pro	Ser Pro	His Ile	Asp Trp Thr	Ala Gly	Ala Val								
2210			2215		2220									
Ser Leu	Leu Thr	Glu Ala	Ala Glu	Trp Pro Asp	Ala Gly	Arg Pro								
2225			2230		2235									
Arg Arg	Ala Gly	Ile Ser	Ser Phe	Gly Val Ser	Gly Thr	Asn Ala								
2240			2245		2250									
His Val	Ile Ile	Glu Gln	Pro Pro	Val Glu Glu	Pro Ala	Thr Ala								
2255			2260		2265									
Thr Glu	Thr Gly	Ser Gly	Thr Gly	Leu Pro Ala	Gly Thr	Pro Leu								
2270			2275		2280									
Pro Phe	Ala Leu	Ser Gly	Arg Thr	Pro Ala Ala	Leu Arg	Ala Gln								
2285			2290		2295									
Ala Ala	Arg Leu	Ile Gly	His Leu	Ala Pro Arg	Pro Glu	Ala Ala								

2300	2305	2310
Pro Ala Asp Val Ala Leu Ser 2315	Leu Ala Thr Thr Arg 2320	Thr Ala Leu 2325
Asp Arg Arg Ala Ala Val Ile 2330	Ala His Asp Arg Thr 2335	Glu Leu Leu 2340
Ala Gly Leu Thr Ala Leu Ala 2345	Glu Gly His Asp Ser 2350	Ala Arg Leu 2355
Val Gln His Thr Ala Ala Asp 2360	Gly Arg Thr Ala Ile 2365	Leu Phe Thr 2370
Gly Gln Gly Ser Gln Arg Pro 2375	Gly Met Gly Arg Glu 2380	Leu Tyr Glu 2385
Thr Tyr Pro Ala Phe Ala Glu 2390	Ala Leu Asp Ala Val 2395	Cys Ala Glu 2400
Leu Asp Pro His Leu Glu Gln 2405	Pro Leu Lys Glu Val 2410	Leu Phe Thr 2415
Ala Asp Gly Asp Leu Leu Asn 2420	Arg Thr Gly Arg Thr 2425	Gln Pro Ala 2430
Leu Phe Ala Leu Glu Thr Ala 2435	Leu Tyr Arg Leu Val 2440	Glu Ser Trp 2445
Gly Val Arg Pro Asp Phe Val 2450	Ala Gly His Ser Ile 2455	Gly Glu Ile 2460
Thr Ala Ala His Val Ala Gly 2465	Val Leu Ser Leu Pro 2470	Asp Ala Ala 2475
Thr Leu Val Ala Ala Arg Gly 2480	Arg Leu Met Gln Glu 2485	Leu Pro Glu 2490
Gly Gly Ala Met Ile Ala Leu 2495	Thr Ala Thr Glu Asp 2500	Glu Val Leu 2505
Pro Leu Leu Ala Gly His Glu 2510	Asp Arg Ile Gly Ile 2515	Ala Ala Val 2520
Asn Ser Ala Ser Ser Val Val 2525	Ile Ser Gly Glu Glu 2530	Gly Leu Ala 2535
Leu Glu Ile Ala Ala Glu Phe 2540	Glu Arg Arg Gly Arg 2545	Arg Thr Lys 2550
Arg Leu Thr Val Ser His Ala 2555	Phe His Ser Pro Leu 2560	Met Asp Gly 2565
Met Leu Asp Ala Phe Arg Glu 2570	Val Ala Glu Ser Leu 2575	Thr Tyr Arg 2580
Ala Pro Ala Ile Pro Val Val 2585	Thr Leu Leu Thr Gly 2590	Thr Val Ala 2595
Gly Asp Glu Leu Arg Thr Ala 2600	Glu His Trp Val Ser 2605	His Val Arg 2610
Glu Ala Val Arg Phe Leu Asp 2615	Gly Ile Arg Thr Leu 2620	Asp Ala Glu 2625

2615						2620						2625							
His Val 2630	Thr Thr Tyr	Leu Glu	Leu Gly Pro Gln	Gly Val Leu Ser		2635						2640							
Gly Leu 2645	Gly Arg Asp Cys	Leu Thr Asp Pro Ala	Asp Arg Asp	Pro Ala Asp		2650						2655							
Thr Ala 2660	Val Phe Val Pro	Ala Ile	Leu Arg Arg Asp	Arg Gly Glu Ala		2665						2670							
Glu Ala 2675	Leu Thr Ala Ala	Ile Ala Ala Ala His	Thr Arg Gly Val			2680						2685							
Pro Leu 2690	Asp Trp Ser Ala	Tyr Phe Ala Gly Thr	Gly Ala Arg Arg			2695						2700							
Val Glu 2705	Leu Pro Thr Tyr	Ala Phe Gln Arg Glu	Arg Phe Trp Leu			2710						2715							
Glu Ala 2720	Pro Ala Gly Tyr	Ile Gly Asp Val Glu	Ser Ala Gly Met			2725						2730							
Gly Ala 2735	Ala His His Pro	Leu Leu Gly Ala Ala	Val Ala Leu Ala			2740						2745							
Asp Gly 2750	Glu Gly Phe Leu	Phe Thr Gly Arg Leu	Ser Leu Asp Thr			2755						2760							
His Pro 2765	Trp Leu Ala Asp	His Ala Val Met Gly	Asn Val Leu Leu			2770						2775							
Pro Gly 2780	Thr Ala Phe Val	Glu Leu Ala Ile Arg	Ala Gly Asp Gln			2785						2790							
Ala Gly 2795	Cys Asp Leu Leu	Glu Glu Leu Thr Leu	Glu Ala Pro Leu			2800						2805							
Ile Leu 2810	Ala Pro Gln Ala	Ala Ala Arg Leu Gln	Ile Val Val Gly			2815						2820							
Ala Pro 2825	Asp Gly Ser Gly	Arg Arg Thr Leu Asp	Val Tyr Ser Ser			2830						2835							
Asp Pro 2840	Asp Ala Pro Ala	Asp Glu Pro Trp Thr	Arg His Ala Gly			2845						2850							
Gly Ile 2855	Leu Ala Thr Gly	Ala Gln Ala Pro Ala	Phe Asp Leu Thr			2860						2865							
Ala Trp 2870	Pro Pro Pro Gly	Ala Glu Ala Val Gly	Val Asp Gly Leu			2875						2880							
Tyr Glu 2885	His Leu Gly Arg	Gly Gly Phe Ala Tyr	Gly Pro Val Phe			2890						2895							
Gln Gly 2900	Leu Arg Ala Ala	Trp Leu Leu Gly Asp	Asp Val Tyr Ala			2905						2910							
Glu Val 2915	Ala Leu Pro Asp	Asp Arg Gln Ala Glu	Ala Ala Arg Phe			2920						2925							
Gly Leu 2930	His Pro Ala Leu	Leu Asp Ala Ala Leu	His Ala Thr Phe			2935						2940							

2930	2935	2940
Val Gln Pro Ser Pro Asp Gly Asp Gln Gln Gly Arg Leu Pro Phe 2945 2950 2955		
Ser Trp Arg Asp Val Ser Leu His Ala Val Gly Ala Ser Ala Leu 2960 2965 2970		
Arg Val Arg Leu Thr Pro Asp Gly Arg Asp Thr Leu Ser Leu Gln 2975 2980 2985		
Leu Ala Asp Thr Thr Gly Ala Pro Val Ala Ala Val Gly His Leu 2990 2995 3000		
Thr Leu Arg Pro Val Ser Ala Asp Gln Leu Gly Ser Ala Arg Ser 3005 3010 3015		
Ala His His Glu Ser Leu Phe Arg Ile Asp Trp Ala Thr Val Pro 3020 3025 3030		
Leu Pro Ser Asp Ala Pro Ala Ala Thr Asp Glu Trp Ala Val Ile 3035 3040 3045		
Ala Ala Asp Gly Gly Thr Asp Gly Gly Thr Asp Gly Gly Thr Asp 3050 3055 3060		
Gly Gly Ile Pro Ala Ala Leu Pro Gly Arg Val His Thr Gly Leu 3065 3070 3075		
Asp Ala Leu Gly Ala Ala Val Asp Ala Gly Ala Pro Val Pro Ala 3080 3085 3090		
His Val Leu Val His His Thr Pro Ala Ala Thr Thr Ala Asp Ala 3095 3100 3105		
Val His Ala Ala Thr His Glu Ala Leu Arg Leu Val Arg Ala Trp 3110 3115 3120		
Leu Ala Asp Asp Arg Phe Ala Ala Ser Arg Leu Val Phe Val Thr 3125 3130 3135		
Arg Gly Ala Ile Ala Thr Gln Ser Asp Trp Asp Leu Thr Asp Leu 3140 3145 3150		
Thr His Ala Pro Val Trp Gly Leu Val Arg Thr Ala Gln Ser Glu 3155 3160 3165		
Asn Pro Asp Arg Phe Val Leu Ala Asp Leu Asp Ala Asp Pro Ala 3170 3175 3180		
Ser Thr Asp Ala Leu Ala Ala Ala Leu Ala Thr Gly Glu Pro Gln 3185 3190 3195		
Leu Ala Val Arg Arg Gly Thr Val His Ala Pro Arg Leu Ala Arg 3200 3205 3210		
Val Pro Ala Ala Thr Pro Leu Thr Pro Pro Pro Gly Glu Ser Ala 3215 3220 3225		
Trp Arg Met Asp Ile Glu Asp Lys Gly Thr Leu Asp His Leu Thr 3230 3235 3240		
Leu Val Pro Ser Pro Glu Ser Ala Ala pro Leu Glu Pro Gly Gln 3245		

Val Arg 3260	Val Ala 3260	Val Arg 3260	Ala 3265	Ala Gly 3265	Leu Asn 3270	Phe 3270	Arg Asp 3270	Val 3270
Leu Asn 3275	Ala Leu 3275	Gly Met 3280	Tyr 3280	Pro Gly 3285	Asp 3285	Pro Gly 3285	Leu Met 3285	Gly 3285
Ser Glu 3290	Gly Ala 3290	Gly Ile 3295	Val 3295	Val Glu 3300	Thr Gly 3300	Pro 3300	Gly Val 3300	Thr 3300
Gly Leu 3305	Ala Pro 3310	Gly Asp 3310	Arg 3310	Val Met 3315	Gly Met 3315	Leu 3315	Pro Gly 3315	Ser 3315
Phe Gly 3320	Pro Leu 3320	Ala Val 3325	Val 3325	Asp Arg 3330	Arg Met 3330	Ile 3330	Ala Pro 3330	Met 3330
Pro Glu 3335	Gly Trp 3340	Thr Phe 3340	Ala 3340	Glu Ala 3345	Ala Ser 3345	Val 3345	Pro Ile 3345	Val 3345
Phe Met 3350	Thr Ala 3350	Tyr Tyr 3355	Ala 3355	Leu His 3360	Asp Leu 3360	Ala 3360	Gly Leu 3360	Gln 3360
Gly Gly 3365	Glu Ser 3370	Leu Leu 3370	Val 3370	His Ala 3375	Ala Ala 3375	Gly 3375	Gly Val 3375	Gly 3375
Met Ala 3380	Ala Val 3385	Gln Leu 3385	Ala 3385	Arg His 3390	Trp Gly 3390	Ala 3390	Asp Val 3390	Tyr 3390
Ala Thr 3395	Ala Ser 3400	Pro Ala 3400	Lys 3400	Trp Asp 3405	Thr Leu 3405	Arg 3405	Gly Leu 3405	Gly 3405
Leu Gly 3410	Asp Asp 3415	Arg Ile 3415	Ala 3415	Ser Ser 3420	Arg Thr 3420	Leu 3420	Asp Phe 3420	Glu 3420
Glu Thr 3425	Phe Arg 3430	Thr Ala 3430	Thr 3430	Gly Gly 3435	Arg Gly 3435	Val 3435	Asp Val 3435	Val 3435
Leu Asp 3440	Ser Leu 3445	Ala Arg 3445	Glu 3445	Phe Val 3450	Asp Ala 3450	Ser 3450	Leu Arg 3450	Leu 3450
Leu Pro 3455	Arg Gly 3460	Gly Arg 3460	Phe 3460	Val Glu 3465	Met Gly 3465	Lys 3465	Thr Asp 3465	Val 3465
Arg Ser 3470	Pro Gln 3475	Asp Val 3475	Ala 3475	Asp Ala 3480	His Pro 3480	Gly 3480	Val Ser 3480	Tyr 3480
Gln Ala 3485	Phe Asp 3490	Leu Thr 3490	Glu 3490	Ala Gly 3495	Leu Asp 3495	Arg 3495	Ile Gln 3495	Glu 3495
Met Leu 3500	Thr Glu 3505	Leu Leu 3505	Thr 3505	Leu Phe 3510	Arg Ser 3510	Gly 3510	Ala Leu 3510	Arg 3510
Pro Val 3515	Pro Val 3520	Ser Ala 3520	Trp 3520	Asp Leu 3525	Arg Gln 3525	Ala 3525	Pro Glu 3525	Ala 3525
Phe Arg 3530	Tyr Leu 3535	Ser Gln 3535	Ala 3535	Arg His 3540	Val Gly 3540	Lys 3540	Ile Val 3540	Leu 3540
Thr Leu 3545	Pro Gly 3550	Glu Trp 3550	Asn 3550	Ser Gln 3555	Gly Thr 3555	Val 3555	Leu Ile 3555	Thr 3555
Gly Gly 3560	Thr Gly 3565	Thr Leu 3565	Gly 3565	Ala Val 3570	Val Ala 3570	Arg 3570	His Ala 3570	Val 3570

3875					3880					3885				
Pro	Ala	Thr	Leu	Val	Phe	Asp	Tyr	Pro	Thr	Pro	Thr	Val	Leu	Ala
3890						3895					3900			
Gly	Tyr	Leu	Lys	Asp	Glu	Leu	Leu	Gly	Ser	Glu	Ala	Ala	Ala	Ala
3905					3910						3915			
Leu	Pro	Lys	Leu	Ala	Ala	Thr	Ala	Val	Glu	Gly	Asp	Asp	Pro	Ile
3920					3925						3930			
Ala	Ile	Val	Ala	Met	Ser	Cys	Arg	Phe	Pro	Gly	Asp	Val	Arg	Thr
3935					3940						3945			
Pro	Glu	Asp	Leu	Trp	Glu	Leu	Leu	Ala	Glu	Gly	Arg	Asp	Gly	Ile
3950					3955						3960			
Ser	Asp	Leu	Pro	Asp	Asp	Arg	Gly	Trp	Asp	Thr	Glu	Ala	Leu	Tyr
3965					3970						3975			
Asp	Pro	Asp	Pro	Asp	Ser	Pro	Gly	Thr	Ser	Tyr	Ala	Arg	Glu	Gly
3980					3985						3990			
Gly	Phe	Phe	Tyr	Asp	Ala	His	His	Phe	Asp	Pro	Ala	Phe	Phe	Gly
3995					4000						4005			
Ile	Asn	Pro	Arg	Glu	Ala	Leu	Ala	Met	Asp	Pro	Gln	Gln	Arg	Leu
4010					4015						4020			
Leu	Leu	Glu	Thr	Ser	Trp	Glu	Ala	Phe	Glu	Arg	Ala	Gly	Ile	Asp
4025					4030						4035			
Pro	Thr	Gly	Leu	Arg	Gly	Lys	Gln	Val	Gly	Val	Phe	Val	Gly	Gln
4040					4045						4050			
Met	His	Asn	Asp	Tyr	Val	Ser	Arg	Leu	Asn	Thr	Val	Pro	Glu	Gly
4055					4060						4065			
Val	Glu	Gly	Tyr	Leu	Gly	Thr	Gly	Gly	Ser	Ser	Ser	Ile	Ala	Ser
4070					4075						4080			
Gly	Arg	Val	Ser	Tyr	Thr	Phe	Asp	Phe	Glu	Gly	Pro	Ala	Val	Thr
4085					4090						4095			
Val	Asp	Thr	Ala	Cys	Ser	Ser	Ser	Leu	Val	Ala	Leu	His	Leu	Ala
4100					4105						4110			
Ala	Gln	Ala	Leu	Arg	Asn	Gly	Glu	Cys	Thr	Leu	Ala	Leu	Ala	Gly
4115					4120						4125			
Gly	Val	Thr	Ile	Ile	Thr	Thr	Pro	Asp	Val	Phe	Thr	Glu	Phe	Ser
4130					4135						4140			
Arg	Gln	Arg	Gly	Leu	Ala	Ser	Asp	Gly	Arg	Cys	Lys	Pro	Phe	Ala
4145					4150						4155			
Glu	Ala	Ala	Asp	Gly	Thr	Ala	Trp	Gly	Glu	Gly	Val	Gly	Met	Leu
4160					4165						4170			
Leu	Val	Glu	Arg	Leu	Ser	Asp	Ala	Arg	Arg	Asn	Gly	His	Gln	Val
4175					4180						4185			
Leu	Ala	Val	Val	Arg	Gly	Thr	Ala	Val	Asn	Gln	Asp	Gly	Ala	Ser

4190		4195		4200	
Asn Gly Leu Thr Ala Pro	4205	Asn Gly Pro Ser Gln Gln Arg Val Ile	4210	4215	
Arg Gln Ala Leu Ala Asn Ala	4220	Gly Leu Thr Ala Ala Glu Val Asp	4225	4230	
Ala Val Glu Ala His Gly Thr	4235	Gly Thr Arg Leu Gly Asp Pro Ile	4240	4245	
Glu Ala Gln Ala Leu Leu Ala	4250	Thr Tyr Gly Gln Asp Arg Pro Glu	4255	4260	
Gly Ser Pro Leu Trp Leu Gly	4265	Ser Ile Lys Ser Asn Phe Gly His	4270	4275	
Thr Gln Ala Ala Ala Gly Val	4280	Ala Gly Ile Ile Lys Met Val Gln	4285	4290	
Ala Met His His Gly Val Leu	4295	Pro Lys Thr Leu His Val Asp Ala	4300	4305	
Pro Ser Pro His Val Asp Trp	4310	Ser Ala Gly Ala Val Ser Leu Leu	4315	4320	
Thr Glu Gln Met Ala Trp Pro	4325	Glu Thr Gly Arg Pro Arg Arg Ala	4330	4335	
Gly Val Ser Ser Phe Gly Met	4340	Ser Gly Thr Asn Ala His Ala Ile	4345	4350	
Ile Glu Leu Ala Pro Asp Ala	4355	Ala Thr Pro Ser Ala Ala Arg Pro	4360	4365	
Glu Pro Ala Pro Ala Ala Leu	4370	Pro Trp Asn Leu Ser Ala Arg Thr	4375	4380	
Pro Asp Ala Leu Arg Ala Gln	4385	Gly Glu Arg Leu Leu Ser His Leu	4390	4395	
Glu Thr His Cys Glu Thr His	4400	Pro Glu Thr Val Leu Ala Asp Ile	4405	4410	
Gly His Ser Leu Thr Thr Gly	4415	Arg Ala Leu Phe Glu His Arg Ala	4420	4425	
Thr Val Val Ala Gly Asp Arg	4430	Asp Gly Phe Arg Ala Gly Leu Ala	4435	4440	
Ala Leu Ala Glu Gly Arg Thr	4445	Ala Ala Gly Leu Ile Gln Gly Ser	4450	4455	
Ser Ser Thr Gly Gly Arg Thr	4460	Ala Phe Leu Phe Thr Gly Gln Gly	4465	4470	
Ser Gln Arg Leu Gly Met Gly	4475	Arg Glu Leu Tyr Glu Ala Tyr Pro	4480	4485	
Val Phe Ala Arg Ala Leu Asp	4490	Glu Val Cys Ala Arg Leu Glu Leu	4495	4500	
Pro Leu Pro Leu Lys Asp Val		Leu Phe Gly Thr Asp Thr Gly Leu			

4505	4510	4515
Leu Asn Glu Thr Ala Tyr Thr 4520	Gln Pro Ala Leu Phe 4525	Ala Val Glu 4530
Val Ala Leu Phe Arg Leu Val 4535	Glu Ser Trp Gly 4540	Leu Lys Pro Asp 4545
Phe Leu Ala Gly His Ser Ile 4550	Gly Glu Ile Ala 4555	Ala Ala His Val 4560
Ala Gly Val Leu Ser Leu Glu 4565	Asp Ala Cys Ala Leu 4570	Val Ser Ala 4575
Arg Gly Arg Leu Met Gly Ala 4580	Leu Pro Gly Gly 4585	Gly Val Met Ile 4590
Ala Val Gln Ala Ser Glu Gly 4595	Glu Val Leu Pro Leu 4600	Leu Leu Thr Asp 4605
Arg Val Ser Ile Ala Ala Ile 4610	Asn Gly Pro Gln Ser 4615	Val Val Ile 4620
Ala Gly Asp Glu Ala Asp Ala 4625	Val Ala Ile Val Glu 4630	Ser Phe Ser 4635
Asp Arg Lys Ser Lys Arg Leu 4640	Thr Val Ser His Ala 4645	Phe His Ser 4650
Pro His Met Asp Gly Met Leu 4655	Asp Asp Phe Arg Ala 4660	Val Ala Glu 4665
Gly Leu Ser Tyr Gly Ala Pro 4670	Arg Ile Pro Val Val 4675	Ser Asn Leu 4680
Thr Gly Ala Leu Val Ser Asp 4685	Glu Met Gly Ser Ala 4690	Asp Phe Trp 4695
Val Arg His Val Arg Glu Ala 4700	Val Arg Phe Leu Asp 4705	Gly Ile Arg 4710
Ala Leu Glu Ala Ala Gly Val 4715	Thr Thr Tyr Ile Glu 4720	Leu Gly Pro 4725
Asp Gly Ile Leu Ser Ala Met 4730	Ala Gln Glu Cys Ile 4735	Thr Gly Glu 4740
Gly Ala Ala Phe Ala Pro Val 4745	Leu Arg Ala Gly Arg 4750	Asp Glu Ala 4755
Glu Thr Val Leu Ser Ala Leu 4760	Ala Ala Ala His Val 4765	Arg Gly Val 4770
Pro Val Asp Trp Gln Ala Phe 4775	Tyr Ala Pro Ala Gly 4780	Ala Gln Arg 4785
Val Pro Leu Pro Thr Tyr Ala 4790	Phe Gln Arg Ser Val 4795	Tyr Trp Leu 4800
Asp Ala Gly Arg Ala Gln Gly 4805	Asp Ile Ala Ser Ala 4810	Gly Leu Gly 4815
Ala Thr Asp His Pro Leu Leu	Ser Ala Ala Val Glu	Leu Pro Asp

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Pro Trp Leu Ala Asp His Ala	Val Leu Gly Ser Val	Leu Leu Pro	
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Gly Thr Ala Phe Val Glu Leu	Ala Leu Arg Ala Gly	Asp Gln Val	
4865	4870	4875	
Gly Cys Asp Leu Ile Asp Glu	Leu Thr Leu Glu Ala	Pro Leu Val	
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Leu Pro Pro His Gly Gly Val	Gln Leu Arg Leu Ala	Val Ala Ala	
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Ala Asp Ala Thr Gly Arg Arg	Thr Leu Ala Phe His	Ser Arg Ser	
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Glu Asp Ala Asp Ala Gly Thr	Pro Trp Thr Arg His	Ala Ser Gly	
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Val Leu Ala Val Gly Ala Glu	Arg Thr Pro Gln Ser	Leu Thr Glu	
4940	4945	4950	
Trp Pro Pro Thr Gly Ala Glu	Ser Val Pro Val Asp	Gly Leu Tyr	
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Glu Gly Leu Ala Glu Ser Gly	Phe Gly Tyr Gly Pro	Val Phe Gln	
4970	4975	4980	
Gly Leu Arg Ala Ala Trp Arg	Arg Asp Gly Glu Tyr	Tyr Ala Glu	
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Val Ala Leu Pro Glu Gly Thr	Glu Asp Glu Ala Gly	Arg Phe Gly	
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Leu His Pro Ala Leu Leu Asp	Ala Ala Leu His Ala	Leu Gly Leu	
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Gly Ser Thr Asp Thr Glu Gly	Gly Glu Gly Arg Leu	Pro Phe Ser	
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Trp Ser Gly Val His Leu His	Ala Val Gly Ala Ser	Ala Leu Arg	
5045	5050	5055	
Val Arg Leu Thr Thr Ser Arg	Ser Gly Glu Val Ala	Leu Thr Ile	
5060	5065	5070	
Ala Asp Ala Ala Gly Glu Pro	Val Ala Thr Val Ala	Gly Leu Ala	
5075	5080	5085	
Leu Arg Ala Val Ser Arg Glu	Gln Leu Ser Thr Ala	Arg Asp Leu	
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Thr Arg Asp Ala Leu Phe Arg	Val Asp Trp Thr Ala	Leu Pro Ala	
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Gly Gly Ala Val Gly Ser Leu	Asp Asp Trp Met Leu	Leu Gly Ala	
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Gly Ser Gln Val Tyr Ala Asp	Leu Ala Gly Leu Gly	Val Ala Val	

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Glu Pro Asp Ala Glu Ser Ala 5165 5170	Ala Gly Gly Val Ala 5170 5175	Gly Thr Val 5175 5180
His Ala Ala Val Glu Arg Ala 5180 5185	Leu Ser Leu Val Gln 5185 5190	Glu Trp Leu 5190 5195
Ser Asp Glu Arg Phe Ala Asp 5195 5200	Ala Arg Leu Val Phe 5200 5205	Leu Thr Arg 5205 5210
Gly Ala Val Ala Ala Arg Ala 5210 5215	Gly Asp Thr Val Pro 5215 5220	Gly Leu Val 5220 5225
Gln Ala Ala Val Trp Gly Leu 5225 5230	Val Arg Ser Ala Gln 5230 5235	Ser Glu Asn 5235 5240
Pro Gly Arg Phe Ala Leu Ile 5240 5245	Asp Val Asp Gly Asp 5245 5250	Gly Asp Gly 5250 5255
Asp Gly Glu Val Asp Gly Asp 5255 5260	Val Leu Ser Ala Ala 5260 5265	Leu Ala Thr 5265 5270
Gly Glu Pro Glu Leu Ala Val 5270 5275	Arg Glu Gly Ala Leu 5275 5280	Leu Val Pro 5280 5285
Arg Leu Ala Arg Ala Ala Val 5285 5290	Val Glu Gly Ala Gly 5290 5295	Arg Glu Leu 5295 5300
Asp Val Asp Gly Thr Val Leu 5300 5305	Val Thr Gly Ala Ser 5305 5310	Gly Thr Leu 5310 5315
Gly Gly Leu Phe Ala Arg His 5315 5320	Leu Val Val Glu Arg 5320 5325	Gly Val Arg 5325 5330
Arg Leu Leu Leu Val Ser Arg 5330 5335	Arg Gly Glu Ala Ala 5335 5340	Glu Gly Ala 5340 5345
Ala Glu Leu Gly Ala Glu Leu 5345 5350	Thr Glu Leu Gly Ala 5350 5355	Asp Val Arg 5355 5360
Trp Ala Ala Cys Asp Val Ala 5360 5365	Asp Arg Asp Ala Leu 5365 5370	Glu Ala Val 5370 5375
Leu Ala Gly Ile Pro Ala Glu 5375 5380	Tyr Pro Leu Ser Gly 5380 5385	Val Val His 5385 5390
Thr Ala Gly Val Leu Asp Asp 5390 5395	Gly Val Val Ser Ser 5395 5400	Leu Thr Pro 5400 5405
Glu Arg Leu Ser Ala Val Leu 5405 5410	Arg Pro Lys Val Asp 5410 5415	Ala Ala Trp 5415 5420
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Leu Phe Ser Ser Ala Ala Gly 5435 5440	Val Phe Gly Gly Ala 5440 5445	Gly Gln Ala 5445 5450
Asn Tyr Ala Ala Ala Asn Val 5450 5455	Phe Leu Asp Ala Leu 5455 5460	Ala Gln His 5460 5465

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Pro Asp Pro Asp Gly Lys Gly Thr Ser Tyr Thr Arg Ser Gly Gly 5735 5740 5745		
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Glu Gly Tyr Leu Gly Thr 5825	Gly Asn Ser Gly Ser 5830	Ile Ala Ser Gly 5835
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Asp Thr Ala Cys Ser Ser 5855	Ser Leu Val Ala Leu 5860	His Trp Ala Ile 5865
Gln Ala Leu Arg Asn Gly 5870	Glu Cys Thr Met Ala 5875	Leu Ala Gly Gly 5880
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Gln Arg Gly Leu Ala Ala 5900	Asp Gly Arg Ile Lys 5905	Ser Phe Ala Ala 5910
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Gln Pro Leu Trp Leu Gly 6020	Ser Ile Lys Ser Asn 6025	Met Gly His Thr 6030
Gln Ala Ala Ala Gly Val 6035	Ala Gly Ile Ile Lys 6040	Met Ile Met Ala 6045
Ile Arg His Gly Val Leu 6050	Pro Lys Thr Leu His 6055	Val Asp Glu Pro 6060
Thr Pro His Val Asp Trp 6065	Glu Ala Gly Ala Val 6070	Ser Leu Leu Thr 6075
Glu Ser Val Pro Trp Pro 6080	Glu Thr Gly Arg Pro 6085	Arg Arg Ala Gly 6090

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Arg His Val Arg Glu Ala Val	Arg Phe Leu Asp Gly Ile Arg Thr			
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Ala Glu Val Ser Leu Asp Glu 6755	Glu Ser Ala Glu Ser Ala Glu Trp 6760	6765
Phe Gly Leu His Pro Ala Leu 6770	Leu Asp Ala Thr Leu His Ala Ala 6775	6780
Gly Leu Gly Gly Leu Val Glu 6785	Ser Thr Gly Gln Gly Arg Leu Pro 6790	6795
Phe Ala Trp Ser Asn Val Ser 6800	Leu His Ala Ala Gly Ala Ser Ala 6805	6810
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Gln Leu Ala Asp Ala Ala Gly 6830	Ala Pro Val Ala Ser Val Glu Ser 6835	6840
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Gly Gly Arg His Glu Ser Leu 6860	Phe Glu Ile Asp Trp Ala Ala Leu 6865	6870
Pro Leu Ala Pro Val Ser Ala 6875	Ala Glu Gln Arg Pro Trp Ala Leu 6880	6885
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Val Arg His Glu Ala His Thr 6905	Gly Leu Ala Ala Leu Ala Asp Thr 6910	6915
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Glu Arg Ala Leu Gly Leu Val 6950	Gln Glu Trp Leu Ser Asp Glu Arg 6955	6960
Phe Ala Asp Ala Arg Leu Val 6965	Phe Leu Thr Arg Gly Ala Val Ser 6970	6975
Ala Val Pro Gly Glu Asp Val 6980	Thr Asp Leu Val His Ala Pro Val 6985	6990
Trp Gly Leu Val Arg Ser Ala 6995	Gln Ser Glu Asn Pro Gly Arg Phe 7000	7005
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Pro Leu Ser Gly Val Val 7145	His Thr Ala Gly Val 7150	Leu Asp Asp Gly 7155	
Val Val Ser Ser Leu Thr 7160	Pro Glu Arg Leu Ser 7165	Ala Val Leu Arg 7170	
Pro Lys Val Asp Ala Ala 7175	Trp Asn Leu His Glu 7180	Leu Thr Arg Gly 7185	
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Arg Glu Arg Leu Ala Gly 7340	Leu Ala Pro Ala Ala 7345	Arg Asp Glu Ala 7350	

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Pro Thr Pro Asp Ala Leu Val Glu Tyr Leu Arg Asp Glu Leu Trp 7415 7420 7425		
Gln Asp Gly Ala Ala Ala Val Pro Pro Leu Leu Ala Glu Leu Asp 7430 7435 7440		
Arg Leu Glu Lys Thr Leu Val Ala Ser Val Pro Asp Asp Asp Gly 7445 7450 7455		
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Gly Lys Glu Phe Gly Ile Ser 7505 7510		

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<212> DNA

<213> Streptomyces aizunensis

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<400> 37

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 35 40 45
 Glu Ser Pro Glu Asp Leu Trp Arg Leu Val Ser Glu Glu Thr Asp Ala
 50 55 60
 Ile Ser Pro Phe Pro Thr Asp Arg Gly Trp Asp Met Gly Arg Leu Phe
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 Asp Ala Asp Pro Asp Gly Arg Gly Thr Ser Tyr Val Gln Glu Gly Gly
 85 90 95

Phe Leu His Ser Ala Asn Arg Phe Asp Pro Ala Phe Phe Gly Ile Ser
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 Pro Arg Glu Ala Val Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu
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0051051

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gcacaggccg tcgaggggtg gctggacacg accggctga 11619

<210> 39
<211> 338
<212> PRT
<213> Streptomyces aizunensis

<400> 39

Met Thr Thr Ser Asp Ser Arg Ser Asp Ser Arg Ser Gly Ser Asp Ser
1 5 10 15
Gly Phe Asn Ser Gly Phe Asp Ser Glu Gln Thr Pro Ser Thr Glu Thr
20 25 30
Ala Ile Val Phe Pro Gly Met Gly Pro Ser Ser Phe Ala Glu Val Gly
35 40 45
Lys Phe Leu Leu Leu Asp Pro Tyr Ala Arg Arg Arg Leu Ala Glu Ala
50 55 60
Asp Glu Ala Leu Gly Tyr Ser Val Phe Asp Arg Phe Arg Thr Ser Glu
65 70 75 80
Asp Asp Tyr Ser Val Tyr Ser Gln Ile Ala Phe Leu Val Asn Ser Met
85 90 95
Ala Met Ala Asp Arg Ala Val Asp Ala Leu Gly Ile Ser Pro Thr Val
100 105 110
Cys Ala Gly Pro Ser Phe Gly Gln Lys Ala Ala Ser Ala Phe Val Gly
115 120 125
Ser Leu Pro Phe Ala Asp Val Val Arg Leu Thr Ala Glu Leu Ala Arg
130 135 140
Cys Glu Glu Glu Tyr Phe Ala Asp Ala Tyr Gln Asp Val Val Thr His
145 150 155 160
Cys Phe Val Arg Thr Pro Gln Asp Arg Leu Asp Glu Ile Leu Ala Gly
165 170 175
Phe Asp Asp Arg Gly Ala Trp Tyr Asp Ile Ser Gly Arg Leu Asp Ala
180 185 190
Ala Phe His Met Val Ser Val Gln Glu Lys Glu Leu Asp Gly Leu Lys
195 200 205
Ala Gly Ile Ser Ala Val Gly Gly Tyr Ser Met Tyr Ser Met Arg Pro
210 215 220
Pro Val His Ala Ala Ala Phe Ser Ala Leu Arg Arg Lys Ala Glu Glu
225 230 235 240
Glu Val Phe Ala Ala Tyr Glu Leu Ala Asp Pro Thr Leu Pro Val Val
245 250 255
Asn Asp Gln Asp Gly Gly Val Val Arg Asp Ala Ala Gly Met Arg Thr
260 265 270

Met Met Leu Asp Thr Phe Asp Arg Pro Val His Trp Pro Gly Val Val
 275 280 285

Glu Ser Leu Lys Gly Leu Gly Val Gly Thr Val Cys Val Thr Gly Pro
 290 295 300

Asp Asn Leu Phe His Arg Leu Asp Leu Thr Lys Asp Ser Phe Glu Val
 305 310 315 320

Val Thr Val Gly Leu Pro Lys Lys Arg Ser Arg Glu Arg Glu Lys Arg
 325 330 335

Val Ala

<210> 40
 <211> 1017
 <212> DNA
 <213> *Streptomyces aizunensis*

<400> 40
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 ccctcgctcct tcgaggaggt cggaaagtcc ctgctgctcg acccttacgc gcgccggcgc 180
 ctccgggagg cagacgaggg gctcggatat tcggtgttcg accgtttccg cactcccgag 240
 gacgactact cggctctatto gcagatcgcc ttctgggtga attcgatggc tatggccgac 300
 cgggagggtgg acgcgctcgg catctctccc accgtctcgg ccggcccagc ttccggccag 360
 aaggccgcct ccgctttcgt cgggtcgctg cccttcgcgg acgtcgctcg gtcacccgcg 420
 gagctggccc gctcgagga ggagtacttc gccgacgcgt accaggacgt cgtcacgcac 480
 tgcttcgtcc gcaccccga ggaccggctg gacgagatcc tggcgggctt cgacgacgcg 540
 ggtgcctggt acgacatctc cggggggctg gacgcccgtt tccacatggt gtcggtacag 600
 gagaaggagg tggacggggt gaaggcgggc atcagcgcgg tcggcggcta ctccatgtac 660
 tcgatcgccc cgcccggtga cgcggcgccc ttctcggcgc tgcgccgcaa ggccgaggaa 720
 gaggtcttcg ccgcgtacga actggccgac ccaccctgc ccgtgggtcaa cgaccaggac 780
 ggcggggctg tccgggacgc cgcgggatg cgcacgatga tgctggacac cttcgaccgg 840
 ccgcgtccact ggccggggcgt ggtggagtcc ctcaaggggc tcggcggtgg caccgtgtgc 900
 gtgaccgggc ccgacaacct ctccaccgc ctccacctca ccaaggacag cttcgaggtc 960
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<210> 41
 <211> 283
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 41

Met Thr Ala Thr Leu Thr Ala Pro Asp Pro Val Thr Asp Phe Pro Ala
 1 5 10 15

Glu Leu Arg Pro Ala Arg Thr Asp Val Arg Thr Ala Thr Arg Thr Phe
 20 25 30

Phe Phe Ile Leu Trp Arg Asp Ile Phe Val Thr Gly Arg Glu Leu Gly
 35 40 45

Pro Phe Leu Ala Gln Val Leu Val Glu Pro Phe Phe Ile Leu Phe Val
 50 55 60

Phe Gly Lys Val Leu Gly Glu Leu Gly Tyr Thr Gly Gly Gly Phe Gln
 65 70 75 80

Gln Ile Leu Leu Pro Gly Val Val Ala Leu Asn Ser Phe Leu Val Ser
 85 90 95

Leu Gln Asn Thr Ala Leu Pro Leu Val Ile Asp Phe Ser Trp Thr Lys
 100 105 110

Glu Ile Glu Asp Arg Leu Leu Ala Pro Ile Pro Thr Ser Leu Val Ala
 115 120 125

Val Glu Lys Leu Val Phe Gly Ala Leu Arg Gly Ile Ile Ala Ser Leu
 130 135 140

Val Met Ile Pro Val Gly Phe Leu Ile Leu Asp Asp Val Ser Trp Pro
 145 150 155 160

Met Asp Ser Phe Leu Pro Thr Leu Gly Val Leu Leu Thr Gly Ala Leu
 165 170 175

Ala Gly Ser Thr Val Gly Leu Thr Ile Gly Thr Leu Ala Pro Pro Arg
 180 185 190

His Ile Ser Val Ile Phe Ala Val Thr Leu Thr Pro Leu Met Phe Thr
 195 200 205

Gly Cys Thr Gln Phe Pro Trp His Ser Leu Ala Asp Ile Arg Trp Phe
 210 215 220

Gln Val Leu Cys Ala Ile Asn Pro Leu Thr Tyr Val Ser Glu Gly Ile
 225 230 235 240

Arg Ala Leu Leu Leu Pro Pro Gly Gly Pro Gly Ser Ile Pro Leu Trp
 245 250 255

Ile Asp Leu Leu Ala Leu Ser Gly Ala Ile Val Val Phe Gly Leu Ile
 260 265 270

Gly Ile Lys Gly Phe His Arg Arg Ala Gln Asp
 275 280

<210> 42

<211> 852

<212> DNA

<213> Streptomyces aizunensis

<400> 42

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ttctgtcaccg gccgcgaact gggcccgttc ctgcccagg tgctcgtgga accgtttcttc 180
 atctctgttcg tcttcggcaa ggtcctcggc gaactcgggtt acaccggcgg cggtgttcag 240
 cagatcctgc tcccggcggt ggtcgcgctc aacagcttcc tggtcagcct gcagaacacc 300
 gcgctgcccc tggtcatega cttctctctg accaaggaga tcgaggaccg gctcctcgcg 360
 cccatcccca ccagcctggt ggcgctcgag aagctgggtct tcggggcgct ggcgggcac 420
 atcgctcctac tgggtgatgat ccccgctggc ttctctgatcc tcgacgacgt gtctctggccg 480
 atggacagct tcttgccac gctgggcgtg ctgctgacgg gcgcgctggc gggcagcacg 540
 gtgggtctga ccacgcggac gctggccccg ccgcggcaca tcagcgtcat cttcgccgtg 600
 acgctgaccc cgctgatggt caccggctgc acccagttcc cctggcacag cctggcggac 660
 atccgctggt tccaggtgct gtgcgccatc aaccgctga cctacgtcag cgagggggatc 720
 cgcgccctgc tgctgccgc gggcggcccc ggctcgattc cgctgtggat cgatctgctc 780
 gccctgagcg gggcgatcgt ggtcttcggg ctgatcggca tcaagggggt ccaccgcagg 840
 gcgcaggact ga 852

<210> 43
 <211> 329
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 43

Val Asp Ser Ala Val Val Val Asp Gly Leu Val Lys Lys Tyr Arg Ser
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 Arg Asp Arg Pro Ala Val Asp Leu Ser Phe Ser Val Arg Arg Gly
 20 25 30
 Glu Val Phe Gly Phe Leu Gly Pro Asn Gly Ala Gly Lys Thr Thr Thr
 35 40 45
 Ile Gly Ile Leu Thr Thr Arg Val Ala Pro Thr Ala Gly Arg Ala Phe
 50 55 60
 Val Gln Gly Val Asp Val Val Ala His Pro Ala Gln Ala Arg Arg Ala
 65 70 75 80
 Phe Ala Val Val Pro Gln Arg Asn Asn Leu Asp Arg Ser Leu Thr Leu
 85 90 95
 Arg Gln Asn Leu Thr Phe His Ala Gly Tyr His Gly Met Ser Arg Ser
 100 105 110
 Glu Arg Gly Arg Leu Ala Asp Glu Cys Leu Glu Trp Val Gly Leu Ala
 115 120 125
 Asp Arg Gly Lys Ala Arg Gly Asp Glu Leu Ser Gly Gly Gln Ala Gln
 130 135 140
 Arg Val Met Ile Ala Arg Ala Leu Met His Arg Pro Asp Val Leu Phe

145 150 155 160

Leu Asp Glu Pro Ala Thr Gly Leu Asp Pro Gln Ala Arg Leu Phe Ile
165 170 175

His Glu Arg Val Ala Glu Leu Ser Lys Arg Gly Val Thr Thr Val Leu
180 185 190

Thr Thr His Asp Met Asp Glu Ala Ala Lys Leu Cys Asp Arg Val Gly
195 200 205

Ile Val Asp His Gly Arg Leu Leu Ala Leu Asp Thr Pro Gln Ala Leu
210 215 220

Thr Arg Ser Leu Ser Ser Thr Ala Leu Thr Leu Thr Val Gln Pro Ala
225 230 235 240

Gly His Asp Ala Glu Ser Val Val Arg Leu Leu Glu Arg Ile Glu Thr
245 250 255

Val Glu Arg Val Glu Leu Ala His Gln Glu His Ala Lys Glu Gln Gly
260 265 270

Gly Ala Pro Ala Pro Val Arg Leu Arg Leu Tyr Ser Asp Ala Pro Ser
275 280 285

Gly Ala Val Leu Pro Thr Ala Ile Thr Ala Leu Thr Glu Ala Ser His
290 295 300

Asp Ile Lys Asp Val Ser Val Gly Thr Ala Thr Leu Glu Asp Val Phe
305 310 315 320

Ile Lys Leu Thr Gly Arg Glu Leu Arg
325

<210> 44

<211> 990

<212> DNA

<213> *Streptomyces aizunensis*

<400> 44

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aacggggcgg gcaagacgac gaccatcggc atcctacca ccgcgtggc cccacggcg 180

ggcgagcgt tcgtccaggc cgtcgagctc gtggcccacc ccgccaggc gcgcggggcc 240

ttcgccgtcg taccgcagcg caacaacctc gaccggtcgc tgacctccg gcagaacctg 300

accttccacg ccggctatca cgcatgagc cgctccgaac gcggacggct cgccgacgag 360

tgcttgaggt ggggtgggtc cgcgaccgg ggcaaggccc gcggcgacga actctccggc 420

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ctcgacgagc ccgccaccg actcgatccg caggcacggc tgttatcca cgagcgcgtg 540

gccgagctga gcaagcgcg ggtgaccacc gtgctgacca cgcacgacat ggacgaagcc 600

gccaaagtct gcgaccgcgt cggcatcgtc gaccacggcc gactgctggc cctcgacacc 660

ccgcaggcgc tgaccgcggag cctgagcagc accgccctca ccctcacctgt ccagcccgcg 720
 gggcacgcagc ccgagagcgt cgtacgcctg ctggagcgga tcgagacggt cgagcgggtc 780
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 atcaagctca ccggccggga gctgcgatga 990

<210> 45
 <211> 317
 <212> PRT
 <213> Streptomyces aizunensis

<400> 45
 Val Ser Ala Gly Phe Gly Val Glu Pro Gly Ser Leu Arg Trp Met Val
 1 5 10 15
 Ile Gly Ala Thr Gly Met Leu Gly Gly Glu Val Ala Ala Gln Leu Thr
 20 25 30
 Ala Arg Gly Ala Asp Pro Val Gly Val Gly Ser Ala Asp Leu Asp Leu
 35 40 45
 Thr Asp Pro Gln Ala Val Ala Ala Val Ala Asp Gly Gly Pro Asp
 50 55 60
 Val Val Val Asn Cys Ala Ala Trp Thr Ala Val Asp Leu Ala Glu Thr
 65 70 75 80
 Glu Glu Glu Ala Ala Leu Ala Val Asn Gly Thr Gly Ala Gly His Leu
 85 90 95
 Ala Arg Ala Cys Ala Ala Thr Gly Ser Arg Leu Leu His Val Ser Thr
 100 105 110
 Asp Tyr Val Phe Arg Gly Ala Pro Ala Asp Ala Gly His Pro Tyr Ala
 115 120 125
 Glu Asp Ala Glu Pro Asp Pro Ala Thr Ala Tyr Gly Arg Thr Lys Leu
 130 135 140
 Val Gly Glu Arg Ala Val Leu Ala Glu Leu Pro Ala Thr Ala Ala Val
 145 150 155 160
 Val Arg Thr Ser Trp Leu Tyr Gly Arg Asp Asn Gly Gly Phe Val His
 165 170 175
 Thr Met Ala Arg Leu Ala Arg Glu Pro Gly Arg Thr Val Asp Val Val
 180 185 190
 Asp Asp Gln His Gly Gln Pro Ser Trp Thr Pro Asp Val Ala Ala Arg
 195 200 205
 Ile Ile Glu Leu Ala Ala Leu Pro Ala Asp Arg Ala His Gly Val Phe
 210 215 220
 His Ala Thr Gly Gly Gly Arg Thr Thr Trp Tyr Asp Leu Ala Arg Glu
 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430 435 440 445 450 455 460 465 470 475 480 485 490 495 500 505 510 515 520 525 530 535 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810 815 820 825 830 835 840 845 850 855 860 865 870 875 880 885 890 895 900 905 910 915 920 925 930 935 940 945 950 955 960 965 970 975 980 985 990 995

225	230	235	240
Val Phe Arg Leu Thr Gly Gln Asp Pro Asp Arg Val Arg Arg Ile Asp			
245	250	255	
Ser Ser Gly Leu Arg Arg Ala Ala Val Arg Pro Ala Trp Ser Val Leu			
260	265	270	
Gly His Asp Arg Trp Ala Ala Thr Gly Leu Ala Pro Met Arg His Trp			
275	280	285	
Arg Thr Ala Leu Ala Asp Ala Leu Met Gly Asp Pro Val Gly Asp Arg			
290	295	300	
Leu Pro Glu Ser Val Asn Ser Pro Gly Pro Lys Gly Cys			
305	310	315	

<210> 46
 <211> 954
 <212> DNA
 <213> Streptomyces aizunensis

<400> 46
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 ggcgatgctcg gcggcgaagt ggcgcgccag ctacggccc ggggcgcga cccggtgggg 120
 gtcggcagtg cggatctgga cctcaccgac ccgcaggcgg tcgccgcggc cgtggccgac 180
 ggcggccccc atgtcgtcgt caactgcgcc gcctggaccg ccgtggacct ggccgagacc 240
 gaggaggagg cggccctcgc cgtcaacggg acgggagcgg gccacctcgc cgggacctgc 300
 gccgccaccg gcagccgggt cctccacgtc tccaccgact acgtcttcgc aggtgccccg 360
 gccgatgccg gacaccaccta tgcggaggac gccgaaccg accccgccac cgcgtacgga 420
 cgcaccaagc tcgtcggcga gcgcgccgtc ctgcgcgaac tccccgccac cgtctccgtg 480
 gtgcgcacgt cctgggtgta cggacgcgac aacggcgggt tcgtgcacac catggcccg 540
 ctgcgcgcgc agccgggacg caccgtggac gtggtcgacg accagcacgg acagccgagc 600
 tggaccccc atgtcggcgc ccggatcacc gagctcgcgc cctgccccgc cgacggggcg 660
 cacygcgtct tccatgccac cggcgggggc cgcaccacct ggtacgacct ggcccgcgag 720
 gtgttcgggc tgaccggcca ggaccggac cgggtccgcg gcacgcagac ctccgggctg 780
 cgacggggcg cggtcgcccc ggcgatggag gttctggggc atgaccgctg ggccgccacg 840
 gggctcgcgc cgatgcgtca ctggcgcgac gccctcgcgg acgccctcat gggcgacccc 900
 gtgggcgacc gacttcccga gagtgtgaac tccccggccc cgaaaggctg ttga 954

<210> 47
 <211> 204
 <212> PRT
 <213> Streptomyces aizunensis

<400> 47

Val Lys Ser Leu Ser Ile Glu Gly Ala Trp Leu Tyr Glu Pro Leu Leu
 1 5 10 15
 His Asp Asp Glu Arg Gly Thr Phe Leu Glu Val Phe Gln Ser Gln Ala
 20 25 30
 Phe Glu Leu Ala Thr Gly Arg Arg Leu Glu Leu Ala Gln Val Asn Cys
 35 40 45
 Ser Val Ser Arg Arg Gly Val Val Arg Gly Val His Phe Ala Asp Leu
 50 55 60
 Pro Pro Gly Gln Ala Lys Tyr Val Thr Cys Val Arg Gly Ala Val Arg
 65 70 75 80
 Asp Val Ile Val Asp Leu Arg Thr Gly Ser Pro Thr Tyr Arg Ala Trp
 85 90 95
 Glu Ala Val Glu Leu Asp Asp Arg Asp Arg Arg Ala Val Phe Leu Ser
 100 105 110
 Glu Gly Leu Gly His Ala Phe Gln Ala Ile Thr Asp Asp Ala Thr Val
 115 120 125
 Val Tyr Leu Thr Thr Ser Gly Tyr Ala Pro Gly Arg Glu His Gly Val
 130 135 140
 His Pro Leu Asp Pro Glu Leu Gly Ile Thr Trp Leu Pro Gly Met Glu
 145 150 155 160
 Pro Leu Leu Ser Pro Lys Asp Ala Val Ala Pro Thr Leu Ala Val Ala
 165 170 175
 Glu Ala Gln Gly Leu Leu Pro Ala Tyr Glu Asp Cys Val Arg Tyr Val
 180 185 190
 Ser Ser Leu Ala Thr Pro Leu Ser Glu Glu Thr Pro
 195 200
 <210> 48
 <211> 615
 <212> DNA
 <213> Streptomyces aizunensis
 <400> 48
 gtgaatccc tgcgataga gggcgctcg ctctatgagc cgctgctcca cgacgatgag 60
 cgcgccacgt tcctggagggt gttccagagc caggccttcg agctggccac cgccgcgcgc 120
 ctcgaaactgg cccagggtcaa ctgctccgtg tcccgcgcgc gcgtcgctgcg cgcgctccac 180
 ttcgccgact taccgcccgg ccaggccaag tacgtcacct gcgtacgcgg cgcggtgcgc 240
 gatgtgatcg tggacctgcg caccggctcg ccacactacc gcgcctggga ggccgtcgaa 300
 ctgcagacc gcgaccggcg ggcggtcttc ctctccgagg gcctcgcca cgccttcag 360
 gcgatcaccg acgacgccac cgtcgtctac ctgaccacct cgggctacgc ccccgccgt 420
 gagcacggcg tccaccgcgt cgaccgggag ctgggcatca cctggcttc cggcatggaa 480
 ccgctgctgt cccgaagga cgtgtcgcc ccacccctcg cggggcgga ggcccagggt 540

ctgctgcccg cgtacgagga ctgcgtacgg tacgtgtect cgtcgccac accactcagc 600

gaggagaccc cgtga 615

<210> 49

<211> 328

<212> PRT

<213> Streptomyces aizunensis

<400> 49

Val Ala Asn Lys Pro Ile Leu Phe Tyr Val Leu Glu Gly Ile Ala Asp
1 5 10 15

Ala Gly Val Thr Asp Val Gly Ile Ile Val Gly Asp Thr Ala Asp Glu
20 25 30

Ile Arg Ala Ala Val Gly Asp Gly Ser Arg Phe Gly Ile Ser Val Thr
35 40 45

Tyr Ile Pro Gln His Gln Pro Leu Gly Leu Ala His Ala Val Arg Ile
50 55 60

Ala Arg Asp Trp Leu Gly Glu Asp Asp Phe Val Met Tyr Leu Gly Asp
65 70 75 80

Asn Phe Leu Leu Gly Gly Ile Ser Glu Gln Leu Glu Glu Phe Arg Thr
85 90 95

Arg Arg Pro Ala Ala Gln Ile Met Leu Thr Arg Val Pro Asp Pro Ser
100 105 110

Ala Phe Gly Val Val Thr Leu Asp Glu Ala Gly Arg Val Thr Gly Leu
115 120 125

Glu Glu Lys Pro Lys Phe Pro Lys Ser Asp Leu Ala Leu Val Gly Val
130 135 140

Tyr Phe Phe Thr Ala Ala Val His Asp Ala Val Asp Ala Ile Gln Pro
145 150 155 160

Ser Ala Arg Gly Glu Leu Glu Ile Thr Glu Ala Leu Gln Trp Leu Leu
165 170 175

Asp Lys Gly Leu Gly Ile Ala Ser Ser Thr Val Asn Gly Tyr Trp Lys
180 185 190

Asp Thr Gly Asn Ala Thr Asp Met Leu Glu Val Asn Arg Thr Val Leu
195 200 205

Asp Arg Leu Thr Pro Tyr Cys Asp Gly Ser Val Asp Gly Glu Ser Glu
210 215 220

Leu Val Gly Arg Val Val Val Glu Asp Gly Ala Val Ile Thr Arg Ser
225 230 235 240

Arg Ile Val Gly Pro Ala Ile Ile Gly Arg Gly Thr Arg Val Glu Gly
245 250 255

Ser Tyr Ile Gly Pro Phe Thr Ser Val Gly Ala Asp Cys Val Val Val
260 265 270

Asp Ser Glu Ile Glu Tyr Ser Ile Val Leu Ala Gly Ala Ala Ile Asp
 275 280 285

Gly Val Gly Arg Ile Glu Ala Ser Met Ile Gly Arg Gln Ala Gln Val
 290 295 300

Thr Pro Ala Pro Arg Thr Pro Gln Ala His Arg Leu Ile Leu Gly Asp
 305 310 315 320

His Ser Lys Val Gln Ile Arg Ser
 325

<210> 50
 <211> 987
 <212> DNA
 <213> *Streptomyces aizunensis*

<400> 50
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 tcccgcttcg gcacacagct cacctacatc ccgcagcacc agccgctcgg cctggccccc 180
 gccgtgcgca tcgcacggga ctggctcggc gaggacgact tcgtgatgta cctggggcgc 240
 aacttcctgc tcggcgggat cagcgagcag ctggaggagt tccgcaccgc ggggcccgc 300
 gcgcagatca tgctcaccgc ggtcccgat ccctccgcct tcggcgctgt caccctcgac 360
 gaggcgggcc gggtcaccgc cctggaggag aagccgaagt tcccaagag cgatctcgcg 420
 ctggtcggcg tgtacttctt caccgcgcgc gtgcacgacg ccgtggacgc catccagccc 480
 tccgcccgcg gcgagctgga gatcacgag gccctccagt ggctctctga caaggccctc 540
 ggcacgcgct cctccacggt caacggctac tggaaggaca ccggcaacgc caccgacatg 600
 ctggagggtca accgcacggt gctcgacagg ctgaccccg actgcgacgg ctccgtcgac 660
 ggcgagagcg aactggctcg ccgggtcgtc gtcgaggacg gcgcgggtgat caccgcctcc 720
 cggatcgtgg gccccgccat catcgccgcg ggcacccgcg tcgagggtct ctacatcggc 780
 ccgttcacct ccgtcggggc ggactgcgtg gtcgtcgaca gcgagatcga gtactccatc 840
 gtgtggccg gcgcggccat cgacggcgct gcccggatcg agcggtccat gatcgccggt 900
 caggcgcagg tcacccccgc gccccgcacg ccccgaggcc accgtctgat cctcggcgac 960
 cacagcaagg tgcagatccg ttcatga 987

<210> 51
 <211> 328
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 51

Met Asn Ile Leu Ile Thr Gly Ala Ala Gly Phe Ile Gly Ser His Leu
 1 5 10 15

Val Arg Thr Ile Leu Gly Pro Asp Lys Pro Leu Gly Asp Asp Val Arg
 20 25 30
 Val Thr Val Leu Asp Ala Leu Thr Tyr Ala Gly Asn Arg Ala Ser Leu
 35 40 45
 Ala Ala Val Glu Asp Glu Pro Gly Phe Thr Phe Val His Gly Asp Ile
 50 55 60
 Thr Asp Ala Leu Leu Val Asp Arg Leu Val Ala Ala His Asp Ala Val
 65 70 75 80
 Val His Leu Ala Ala Glu Ser His Val Asp Arg Ser Ile Trp Arg Ala
 85 90 95
 Asp Ala Phe Val Arg Thr Asn Val Leu Gly Thr His Thr Leu Leu Glu
 100 105 110
 Ala Ala Leu Arg His Gly Thr Gly Pro Phe Val His Val Ser Thr Asp
 115 120 125
 Glu Val Tyr Gly Ser Val Pro Val Gly Ser Ser Val Glu Ser Asp Pro
 130 135 140
 Leu Thr Pro Ser Ser Pro Tyr Ser Ala Ser Lys Ala Ser Ser Asp Leu
 145 150 155 160
 Leu Ala Leu Ala Tyr His His Thr His Gly Leu Asp Val Arg Val Thr
 165 170 175
 Arg Cys Ser Asn Asn Tyr Gly Pro Tyr Gln His Pro Glu Lys Val Ile
 180 185 190
 Pro Leu Phe Val Thr Arg Leu Leu Ser Gly Ala Ala Val Pro Leu Tyr
 195 200 205
 Gly Asp Gly Gly Asn Val Arg Asp Trp Leu His Val Asp Asp His Cys
 210 215 220
 Arg Ala Leu Leu Ala Val Leu Thr Asp Gly Arg Ala Gly His Thr Tyr
 225 230 235 240
 Asn Ile Gly Gly Gly Thr Glu Leu Thr Asn Lys Glu Leu Thr Gly Leu
 245 250 255
 Leu Leu Asp Ala Cys Gly Ala Gly Trp Asp Arg Val Glu His Val Thr
 260 265 270
 Asp Arg Lys Gly His Asp Arg Arg Tyr Ser Val Asp Trp Thr Lys Ile
 275 280 285
 Arg Thr Glu Leu Gly Tyr Thr Pro Ala His Asp Phe Ala Glu Gly Leu
 290 295 300
 Ala Glu Thr Val Ala Trp Tyr Arg Thr Asn Arg Pro Phe Trp Ala Ala
 305 310 315 320
 Pro Gly Ala Glu Leu Gln Gly Ala
 325

<213> *Streptomyces aizunensis*

<400> 52

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atgaacatcc tgatcacggg agcggcgccg ttcacgcgct cccacctcgt acgcacgacg 60
ctggggcccg acaaaccgct cggcgacgac gtccgcgtca cgtctctgga cgcgctgacc 120
tacgcgggca accgcgcctc cctcgccgcc gtcgaggacg aaccgggctt caccttcgtg 180
cacggcgaca tcaccgacgc gctgctggtg gaccgcctgg tggcgggcca cgacgcgctg 240
gtgcacctgg ccgcccagtc gcacgtcgac cggttcgatct ggcgggccga cgcgttcgta 300
cgcaccaatg tgctcggaac ccacacctg ctggaggccg cgctgcggca cggcacccggc 360
ccgttcgtgc acgtgtcgac cgacgaggtg taaggctcgg tcccggtcgg ctctccgctc 420
gagagcgacc cgctgacgcc cagctcgccc taactccgct ccaaggcgtc cagtgatctg 480
ctggccctgg cctaccacca caccacgga ctcgacgtgc gggtgacgcy ctgctccaac 540
aactacgggc cctaccagca cccggagaag gtgatccgcg tcttcgtcac ccggtgctc 600
agtggcgccg ccgtcccgtc ctacggcgac ggcgggaacg tacgcgactg gctgcacgtc 660
gacgaccact gccgcgctct gctggccgtc ctcaccgacg ggcgcgcggg gcacacgtac 720
aacatcgccg cggcgaccga gctcaccaac aaggagctga ccggcctgct gctggacgcc 780
tgccgcgccg gatgggaccg ggtcgagcac gtcaccgacc gcaagggcca cgaccgccgg 840
tactccgtcg actggacgaa gatccgcacc gagctgggct acaccccccg gcacgacttc 900
gccgagggcc tcgcccagac cgctgcctgg tacagaacca accgccctt ctgggcagcg 960
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<210> 53

<211> 214

<212> PRT

<213> *Streptomyces aizunensis*

<400> 53

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Met Thr His Glu Gly Thr Arg His Ser Thr Arg Glu Thr Thr Pro Asp
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Asp Val Ser Leu Ile Gln Ile Arg Gln Pro Ala Ile Pro Ser Ser Tyr
          20          25          30
Arg Met Ile Cys Phe Pro Ser Ser Arg Asn Ser Ser Ile Cys Tyr Leu
          35          40          45
Ala Met Ser Glu Leu Leu Leu Pro Thr Val Glu Leu Leu Ile Val Gln
          50          55          60
Tyr Pro Ala Leu Thr Ser Glu Glu Glu His Ser Ala Glu Glu Asp Ala
65          70          75          80
Ala Leu Ala Asp Lys Ile Phe Glu Ala Val Arg Gly Trp Ala Asp Arg
          85          90          95

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Pro Leu Ala Leu Phe Gly His Arg Leu Gly Ala Glu Leu Ala Tyr Ala
 100 105 110

Val Ala Gln Arg Leu Glu Arg Glu Thr Asp Ala Ala Pro Leu Thr Leu
 115 120 125

Phe Val Ser Gly Arg Thr Gly Pro Gly His Arg Gly Ser Leu Gly Pro
 130 135 140

Pro Ala Leu Asn Cys Arg Val Val Ala Leu Ala Gly Tyr His Asp Pro
 145 150 155 160

Arg Ala Pro Leu Ala Gly Val Arg Ala Trp Arg Arg Cys Thr Ala Gly
 165 170 175

Arg Phe Asp Leu Glu Val Phe Pro Gly Thr Arg Gly Tyr Leu Asp Ser
 180 185 190

His Arg Arg Glu Val Val Asn Leu Val His Asp Gln Leu Ile Ser Leu
 195 200 205

Arg Gly Pro Glu Pro Asp
 210

<210> 54
 <211> 645
 <212> DNA
 <213> *Streptomyces aizunensis*

<400> 54
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 atccagatcc ggcagcggcg gateccgagc agctaccgca tgatctgttt ccccgattcg 120
 cggaactcct cgatctgcta tctggccatg tcggaactgc tgctgcccac cgtggaactg 180
 ctcatcgctc agtaccggcg cctgacctcc gaggaggagc attcgccga ggaggacgcg 240
 gcgctcgccg acaagatctt cgaagcggtc cggggctggg ccgaccgcc gctcgccctc 300
 ttcgggcacc gcctcggtgc cgaactcgcc tacgcggtcg ccagcggtg ggaacgggag 360
 accgacgcgg caccctcgac cctgttcgtc tccggacgca cgggaccggg ccaccgcggc 420
 agcctcggcc cgcccgcgt caactgccgg gtcgtcgccc tggccgggta ccacgacccc 480
 cgcgaccccc tggccggggt acgggcctgg cggcgctgca cggcgggacg gttcgacctg 540
 gaggtctttc ccggcaccgc cggtacctc gactcgaccc gccgcgaggt cgtcaacctc 600
 gtgcacgacc agctgatttc gctccgcgga ccggagccgc actga 645

<210> 55
 <211> 470
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 55

Val Arg Pro Met Thr Ala Lys Ile Phe Ala Val Asp Ser Val Arg Pro
 1 5 10 15

Ile Asp Glu Phe Glu Gln Asp Ala Leu Arg Val Ala Asp Val Ile Arg
 20 25 30
 Glu Arg Gly Val Cys Leu Gly Asp Arg Val Met Leu Lys Ala Gly Asn
 35 40 45
 Ser Ala Ser Tyr Val Cys Val Leu Tyr Ala Leu Met His Ile Gly Ala
 50 55 60
 Ser Ile Val Leu Val Asp Gln Gln Glu His Lys Glu Glu Thr Arg Arg
 65 70 75 80
 Ile Ala Leu Arg Thr Gly Val Lys Val Thr Phe Val Asp Asp Glu Thr
 85 90 95
 Pro Ile Asp Gln Asp Ala Asp Pro Ile His Leu Tyr Glu Leu Met Val
 100 105 110
 Ala Thr Gln Asn Arg Pro Pro Met Asp Ser Ala Leu Ser Phe Asp Ala
 115 120 125
 Trp Gly Glu Leu Ser Asp Gly Leu Ile Met Trp Thr Ser Gly Ser Thr
 130 135 140
 Gly Ser Pro Lys Gly Val Val Lys Ser Gly Gly Lys Phe Leu Ala Asn
 145 150 155 160
 Leu Arg Arg Asn Ala His Gln Val Gly His Arg Pro Asp Asp Val Leu
 165 170 175
 Met Pro Leu Leu Pro Phe Ala His Gln Tyr Gly Leu Ser Met Val Leu
 180 185 190
 Ile Ala Trp Leu Thr Arg Cys Ser Leu Val Ile Ala Pro Tyr Arg Arg
 195 200 205
 Leu Asp Arg Ala Leu Arg Met Ala Arg Asp Ser Gly Thr Thr Val Ile
 210 215 220
 Asp Ala Thr Pro Ser Ser Tyr Arg Ser Ile Leu Gly Leu Val Thr Arg
 225 230 235 240
 Lys Pro Ala Leu Arg Ala His Leu Ala Gly Thr Arg Met Phe Cys Val
 245 250 255
 Gly Ala Ala Pro Leu Asp Ala Pro Leu Val Glu Ser Tyr Val Gln Glu
 260 265 270
 Phe Gly Leu Pro Leu Leu Asp Ser Tyr Gly Ser Thr Glu Leu Asn Asn
 275 280 285
 Ile Ala Phe Ala Thr Leu Asp Asn Pro Val Ser Cys Gly Arg Ala Met
 290 295 300
 Glu Gly Ile Gly Leu Arg Ile Val Asp Glu Asp Gly Arg Glu Val Ala
 305 310 315 320
 Ala Gly Gln Pro Gly Glu Ile Glu Val Asp Thr Pro Asp Ala Leu Glu
 325 330 335
 Gly Gln Ile Ala Glu Asp Gly Ser Ile Ile Pro Ala Pro Thr Gly Trp
 340 345 350

Gln Arg Thr Gly Asp Leu Gly His Leu Asp Ala Asp Gly Asn Leu Tyr
 355 360 365

Val Leu Gly Arg Lys Phe Ala Val His Arg Met Gly Tyr Thr Leu Tyr
 370 375 380

Pro Glu Leu Ile Glu Arg Lys Val Ala Ala Glu Gly Cys Pro Thr Arg
 385 390 395 400

Ile Val Pro Leu Pro Asp Glu Leu Arg Gly Ser Gln Leu Val Phe Phe
 405 410 415

Val Glu Asp Asp Glu Gln Arg Asp Ala Gly Tyr Trp Arg Glu Arg Leu
 420 425 430

Cys Gly Leu Leu Pro Ala Phe Glu Gln Pro Asn Lys Val Val Val Leu
 435 440 445

Glu Gln Phe Pro Leu Asn Arg Asn Gly Lys Pro Asp Lys Lys Glu Leu
 450 455 460

Thr Arg Met Ala Ala Glu
 465 470

<210> 56

<211> 1413

<212> DNA

<213> Streptomyces aizunensis

<400> 56

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gagcaggacg cctctccgct cgccgatgtg atccgcgaac gccgagctct tctcggcgac 120

cgggtcatgc tgaaggccgg caactcggcg agctactgtc gtgtgtctga cgcgctgatg 180

cacatcgggc cctcgatcgt cctcgtcgac cagcaggaaac acaaggagga gacccgccgc 240

atcgcgctgc gcaccggcgt caaggtcacc ttcgtcgacg acgagacccc gatcgaccag 300

gacgccgacc ccatccacct gtacgaactc atggtggcca ccagaacgg tccgcccatg 360

gacagcgccc tgtcgttcca cgcctggggc gagctgtccg acggcctcat catgtggacc 420

tccgggtcca ccggatcgcc caaggcggtg gtgaagtccg gccggaagtt cctggccaac 480

ctccggcgca acgcccacca ggtcgccac cgctccgacg acgtctgat gccgctgctg 540

cgttcgccc accagtagcg cctgtcgatg gtctctcatg cctgggtcac ccgctgctcc 600

ctggtgatcg cccctaccg gcgtctggac cgggcgctgc gcattggccc cgactcgggc 660

accacggtca tcgacgcgac cccctccagc taccgagca tcctgggctt ggtgaccagg 720

aagcccgccc tgcgcgcga cctggcgggc acccgatgt tctgtgtcgg cgcggccccc 780

ctcgacgcac cgctgggtga gagctactga caggagtctg gcctgccgct gctcgacagc 840

tacggctcga ccgagctgaa caacatcgcc ttcgccaccc tcgacaaccc ggtctcctgc 900

ggcctgtcca tggagggcat cgggctccgg atcgtcgacg aggcggccgc ggaggtggcg 960

gccgggcagc cgggcgagat cgaggtcgac acccccgcag cactcgaagg cgagatagcc 1020

gaggacggtt cgatcattcc ggcgccacc ggctggcagc gcacgggcga cctcgccac 1080
 ctgcagcggg acggcaacct ctacgtctg ggacgcaagt tcgccgtgca ccgcattgggc 1140
 tacacgtctt atcccagact catcgagcgc aaggtcgccg ccgagggctg cccccccgg 1200
 atcgtgcccc tgcccagaca actgcgcggc tcccagctgg tgtttctcgt cgaggacgac 1260
 gagcagcggg acgcccggcta ctggcgggag cggctgtgcg gcctgtgccc gcccttcgag 1320
 cagcccaaca aggtggctgt cctggagcag ttcccgtca accgcaacgg caagccggac 1380
 aagaaggagc tgacgcggat ggccgccgaa tag 1413

<210> 57

<211> 553

<212> PRT

<213> *Streptomyces aizunensis*

<400> 57

Met Thr Ser Phe Ser Pro Ala Pro Thr Thr Met Leu Val Pro Asp Phe
 1 5 10 15
 Pro Phe Ser Tyr Asp Gly Trp Leu Arg His Pro Ala Gly Leu Gly Ala
 20 25 30
 Leu Pro Pro Glu Arg Ala Gly Thr Pro Val Ala Val Val Gly Gly Gly
 35 40 45
 Met Ala Gly Met Thr Ala Ala Tyr Glu Leu Met Arg Leu Gly Leu Arg
 50 55 60
 Pro Val Val Tyr Glu Ala Glu Gln Leu Gly Gly Arg Met Arg Ser Val
 65 70 75 80
 Pro Phe Pro Gly Gln Pro Gly Leu Val Ala Glu Met Gly Ala Met Arg
 85 90 95
 Phe Pro Leu Ser Ala Arg Ser Leu Phe His Tyr Ile Asp Leu Leu Gly
 100 105 110
 Leu Arg Thr Ser Pro Phe Pro Asn Pro Leu Ala Ala Asn Thr Pro Ser
 115 120 125
 Thr Leu Ile Asp Leu Gly Gly Glu Arg His Thr Ala Arg Ser Ala Glu
 130 135 140
 Gln Leu Pro Asp Val Tyr Gln Glu Val Ala Ser Ala Trp Glu Lys Ala
 145 150 155 160
 Leu Gln Glu Arg Ala Glu Leu Ala Thr Met Arg Asp Ala Ile Gln Arg
 165 170 175
 Arg Asp Val Glu Thr Val Lys Gln Ile Trp Asn Arg Leu Val Arg Glu
 180 185 190
 Phe Asp Asp Gln Ser Phe Tyr Gly Phe Leu Ala Thr Ser Ser Ala Phe
 195 200 205
 Pro Ser Phe Arg His Arg Glu Ile Phe Gly Gln Val Gly Phe Gly Thr

210 215 220
 Gly Gly Trp Asp Thr Asp Phe Pro Asn Ser Leu Leu Glu Ile Leu Arg
 225 230 235 240
 Val Val Tyr Thr Glu Ala Asp Asp Asn Gln Val Ala Ile Asp Gly Gly
 245 250 255
 Ser Gln Gln Val Pro Arg Gly Leu Trp Glu His Arg Pro Arg Gly Cys
 260 265 270
 Ala His Trp Pro Ala Gly Thr Ser Leu Ala Ser Leu His Gly Gly Thr
 275 280 285
 Ala Arg Pro Arg Val Arg Ala Val Ala Arg Asp Gly Asp Gly Phe Leu
 290 295 300
 Val Thr Asp Ala Asp Gly His Arg Glu Arg Phe Ala Ser Val Val Tyr
 305 310 315 320
 Thr Pro His Val Trp Thr Leu Leu Asn Arg Val Ala Cys Asp Pro Ala
 325 330 335
 Leu Leu Thr Gln Pro Leu Trp Thr Ala Val Glu Arg Thr His Tyr Met
 340 345 350
 Gly Ala Ser Lys Leu Phe Val Leu Ala Asp Arg Pro Phe Trp Asn Asp
 355 360 365
 Thr Asp Pro Arg Thr Gly Arg Pro Val Met Ser Met Thr Leu Thr Asp
 370 375 380
 Arg Met Pro Arg Gly Val Tyr Leu Phe Asp Asp Gly Pro Asp Arg Pro
 385 390 395 400
 Gly Val Met Cys Leu Ser Tyr Thr Trp Asn Asp Asp Ser Leu Lys Met
 405 410 415
 Ala Thr Leu Ser Ala Asp Glu Arg Leu Asp Val Leu Leu Gly Lys Leu
 420 425 430
 Gly Val Ile Tyr Pro Gly Val Asp Ile Arg Ser His Val Ile Gly Asp
 435 440 445
 Pro Ile Thr Ile Thr Trp Glu Ser Glu Pro His Phe Met Gly Ala Phe
 450 455 460
 Lys Ser Asn Leu Pro Gly Gln Tyr Arg Tyr Gln Arg Arg Leu Phe Thr
 465 470 475 480
 Gln Phe Met Gln Arg Gly Leu Pro Arg Ala Gln Arg Gly Phe Phe Leu
 485 490 495
 Cys Gly Asp Asp Val Ser Trp Thr Ala Gly Phe Ala Glu Gly Ala Val
 500 505 510
 Thr Thr Ala Leu Asn Ala Val Trp Gly Val Leu Asp His Leu Gly Gly
 515 520 525
 Ala Thr Pro Pro Gly Asn Pro Gly Pro Gly Asp Leu Phe Asp Ala Leu
 530 535 540
 Ala Pro Leu Asp Leu Pro Tyr Asp Ser

545

550

<210> 58
 <211> 1662
 <212> DNA
 <213> *Streptomyces aizunensis*

<400> 58

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gacggctggc tgcgccatcc cgcgggactc ggcgcccttc cgcgcgagcg cgcgcgtacg	120
ccggtggcgc tggtcggcgg gggaatggcg ggaatgaccg ccgcgtacga actgatgcgg	180
ctgggcctgc gcccggtcgt atacgaggcg gagcaactgg gtggccggat gcggtcgggtg	240
cccttccccg ggcagcccg cctcgtggcg gagatggggg cgatgcgctt cccgctctcc	300
gcgcgctcgc tgttcacta catcgacctg ctggggctgc gcaccagccc cttccccaac	360
ccgctggcgg cgaacacccc gagcacctc atcgacctcg gcggcgaacg gcacaccgcg	420
cggtcgcggg agcaactccc ggatgtgtac caggagggtg cctcggcctg ggagaaggcc	480
ctgcaggagc gggccgagct ggccaccatg cgggacgcca tccagcgccg cgacgtcgag	540
acggtgaagc agatatggaa ccgactggtc agggagtctg acgaccagtc cttctacggg	600
ttcctggcga ccagttcggc gttcccgtcg ttccggcacc gggagatctt cggccagggtg	660
gggttcggca ccggcggtcg ggacaccgac ttccccaact cgctcctcga aatcctgcgc	720
gtggtctaca ccgaggcgga cgacaaccag gtgcgcatcg acggcggtc ccagcagggtg	780
ccgcgcggcg tgtgggagca ccggccgcgg ggctgcgcgc actggccggc cggcacctct	840
ctcgctcgc tgcacggagg gacggcccgg ccacgggtgc gggccgtcgc cagggacgggt	900
gacgggttcc tcgtcacoga cgcgcagcga caccgggagc ggttcgcctc ggtgtgttac	960
accccgcacg tgtggaccct gctgaaccgg gtcgcgtgcg atccggcgct gctgacgcag	1020
ccgctgtgga ccgccgtgga gcgcaccac tacatggggg cctccaaact gttcgtcctg	1080
gccgacggc ccttctggaa cgacaccgat ccgcggaccg gccctccggt gatgagcatg	1140
acgctcacgg accggtatgc gcgcgggggt tatctcttcg acgacggccc ggaccgcccc	1200
ggcgtgatgt gcctgtcgta cacctggaac gacgactcgc tgaagatggc gacgtgagc	1260
gccgacgagc ggctggacgt gctgctggag aagctcggcg tgatctatcc cggcgtcgac	1320
atccgctccc acgtcatcgg tgatccgac accatcacct gggagagcga gccgcatttc	1380
atgggcgcgt tcaagtccaa tctgccgggc cagtaccgct accagcgagc gctgttcacg	1440
cagttcatcg agcgcgggct gccgcgggcc cagcgcggct tcttctctgt cggcgacgac	1500
gtgtcctgga cggcgggctt cgcggagggc gcggtoacga cggcgtgaa cgcggtgtgg	1560
ggcgtactgg accacctggg cggggccacg ccgcccgcca accccggccc cggcgacctc	1620
ttcgacgcgc tggctccctc cgacctcccc tacgacagct ga	1662

<210> 59
 <211> 231
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 59

Met Ile Glu Glu Leu Leu Pro Glu Gly Ala Val Ala Ser Glu Ala Phe
 1 5 10 15

Gly Pro Asp Gly Ser Ala Leu Leu Tyr Pro Glu Glu Ala Ala Leu Val
 20 25 30

Ala Met Thr Thr Asp Leu Arg Arg Glu Glu Phe Ala Thr Val Arg Ala
 35 40 45

Cys Ala Arg Arg Ala Leu Ala Ala Leu Gly Leu Pro Ser Ala Pro Val
 50 55 60

Leu Pro Gly Val Arg Asn Val Pro Gln Trp Pro Asp Gly Val Val Gly
 65 70 75 80

Ser Met Thr His Cys Ala His Tyr Arg Ala Ala Val Leu Ala Arg Asp
 85 90 95

Thr Asp Leu Ala Met Ile Gly Ile Asp Ala Glu Pro Asp Leu Pro Leu
 100 105 110

Pro Glu Gly Val Leu Glu Ser Ile Ala Leu Pro Arg Glu Leu Ala Trp
 115 120 125

Ala Arg Ser Gly Gly Tyr Gly Ser Ser Leu Arg Arg Asp Arg Leu Leu
 130 135 140

Phe Ser Ala Lys Glu Ala Val Tyr Lys Thr Trp Tyr Pro Leu Leu Gly
 145 150 155 160

Thr Glu Leu Asp Phe Asp Asp Ala Asp Ile Thr Phe Arg His Glu Val
 165 170 175

Gly Pro Asn Gly Arg Pro Gln Gly Thr Phe Thr Ala Arg Ile Leu Arg
 180 185 190

Pro Leu Pro Gly Pro Asp Gly Arg Pro Val Asp Arg Phe Thr Gly Arg
 195 200 205

Trp Leu Ser Asp Arg Gly Ile Ile Val Thr Val Ile Thr Leu Pro Ala
 210 215 220

Tyr Arg Val Ala Thr Thr Arg
 225 230

<210> 60
 <211> 696
 <212> DNA
 <213> *Streptomyces aizunensis*

<400> 60

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<210> 61
 <211> 306
 <212> PRT
 <213> Streptomyces aizunensis

<400> 61

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 Leu Leu Ala Val Ser Asp Leu His Ile Gly Met Ala Asp Asn Arg Pro
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 Ile Thr Glu Ser Leu Arg Pro Ser His Glu Asp Asp Trp Leu Ile Val
 35 40 45
 Ala Gly Asp Val Gly Glu Leu Thr Glu Asp Ile Glu Trp Ala Leu Arg
 50 55 60
 Leu Leu Ala Gly Arg Phe Ala Lys Val Val Trp Ala Pro Gly Asn His
 65 70 75 80
 Glu Leu Trp Thr Pro Arg Glu Asp Thr Val Gln Leu Arg Gly Glu Glu
 85 90 95
 Arg Tyr Arg Tyr Leu Val Glu Met Cys Arg Gly Leu Gly Val Val Thr
 100 105 110
 Pro Glu Asp Pro Trp Pro Val Trp Glu Gly Pro Gly Glu Pro Val Ala
 115 120 125
 Val Ala Pro Leu Phe Leu Leu Tyr Asp Tyr Thr Phe Arg Val Ala Gly
 130 135 140
 Thr Ser Thr Lys Glu Glu Ser Leu Ala Arg Ala His Glu Ala Gly Val
 145 150 155 160
 Val Cys Thr Asp Glu Tyr Leu Leu His Pro Asp Pro Tyr Arg Ser Arg
 165 170 175
 Asp Asp Trp Cys Arg Ala Arg Val Ser Ala Thr Arg Arg Arg Leu Val

180	185	190
Ala His Asp Pro Ser Val Pro Leu Val Leu Val Asn His Phe Pro Leu		
195	200	205
Val Arg Glu Pro Thr Asp Val Leu Trp His Pro Glu Phe Ala Gln Trp		
210	215	220
Cys Gly Thr Val Leu Thr Ala Asp Trp His Arg Arg Phe Ser Thr Ala		
225	230	235
Ala Val Val Tyr Gly His Leu His Ile Pro Arg Thr Thr Trp Tyr Asp		
245	250	255
Gly Val Arg Phe Glu Glu Val Ser Ile Gly Tyr Pro Arg Glu Trp Arg		
260	265	270
Arg Arg Gly His Pro Arg Gly Leu Leu Arg Gln Ile Leu Pro Tyr Thr		
275	280	285
Pro Glu Pro Glu Pro Glu Thr Pro Ala Arg Thr Glu Pro Gln Glu Thr		
290	295	300

Arg Ala
305

<210> 62
<211> 921
<212> DNA
<213> *Streptomyces aizunensis*

<400> 62
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cacgaggacg actggctgat cgtggccggg gacgtcggcg agctgaccga ggacatcgag 180
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gagctgtgga ccccgcgca ggacacggtg cagttgcgcg gcgaggagcg ctaccggtac 300
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cgggtggcgg gcacctcgac caaggaggag tcgctggccc gggcgacga ggccgggtgtg 480
gtgtgcacgg acgagtacct gctccacccc gaccctgacc ggagccgtga cgactggtgc 540
cgggcccggt tctccgcgac ccggcgccgg ctggtggcgc acgatccgtc ggtgccgctg 600
gtgctggtca accacttccc gctggtgcgc gagccacagg acgtgctgtg gcacccggag 660
ttcgcgcagt ggtgcggcac ggtgctgacc gccgactggc accgcgggtt cagcacggcc 720
gccgtggtgt acgggacact gcacatcccc agggaccact ggtacgacgg ggtccggttc 780
gaggagggtg cgatcggcta cccgcgcgag tggcgccggc gcggccatcc cagggggctg 840
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ccgcaggaga caccggcatg a 921

<210> 63
 <211> 998
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 63

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Met Gly Lys Ala Phe Ala Ala Val Leu Val Glu Arg Asp Glu Gln Ile
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Gly Arg Leu Thr Ser Phe Val Ser Gly Thr Ala Ser Gly Ala Val Ala
          20          25          30

Ala Ala Ala Ala Gly Thr Gly Arg Ile Ala Val Ile Asp Gly Pro Val
          35          40          45

Ala Ser Gly Lys Thr Ala Leu Leu His Arg Val Leu Glu Leu Thr Ala
50          55          60

Gly Ala Gly Pro Arg Val Ile Thr Ala Val Thr Ser Pro Ala Glu Gln
65          70          75          80

Ser Met Pro Phe Gly Val Val Glu Gln Leu Val Arg Asp Ala Gln Ala
          85          90          95

Val Ser Asp Arg Leu Pro Leu His Pro Ser Ala Gly Pro Asp Ala Ala
          100          105          110

Leu Asp Ser Thr Pro Arg Pro Glu Ser Glu Pro Val Pro Ala Glu Ile
115          120          125

Leu Met Ala Phe His Leu Gln Leu Ala Glu Val Cys Ala Arg Gly Pro
130          135          140

Val Leu Ile Val Val Asp Asp Val Gln Tyr Ala Asp Pro Gln Ser Leu
145          150          155          160

Tyr Cys Leu Ala His Met Leu Leu Arg Ala Ser Ala Ser Gly Ala Val
          165          170          175

Val Ser Leu Leu Val Ser Arg Gly Pro Asp Val Gly Gly Thr Pro Pro
180          185          190

Val Val Leu Glu Glu Leu Leu Tyr Gln Leu Arg Gly Leu His Val Arg
195          200          205

Leu Gly Pro Leu Ser Val Asp Gly Val Gly Arg Leu Leu Ala Ala Arg
210          215          220

Asp Pro Glu Ala Gly Ala Arg Lys Pro Ala Ala Pro Ala Ser Trp Ser
225          230          235          240

Thr Pro Leu Ala Ala Ser Val His Ala Ala Thr Gly Gly Asn Pro Leu
          245          250          255

Leu Val His Gly Leu Ile Glu Asp Arg Leu Ser Arg Gln Arg Leu Leu
260          265          270

Ala Ala Gly Pro Gly Ala Gly Pro Ala Ser Ala Glu Ala Gly Asn Gly
275          280          285

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Thr Gly Asn Glu Thr Glu Asp Ala Leu Ala Gly Thr Pro His Ala Gly
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 Asp Gln Phe Leu Gln Ser Ala Leu Ile Cys Val His Arg Thr Gly Ser
 305 310 315 320
 Asp Gly Leu Arg Val Ala Gln Gly Ile Ala Leu Leu Gly Gly Ala Gly
 325 330 335
 Ser Thr Ser Leu Leu Ala Arg Leu Val Glu Val Glu Glu Trp Thr Val
 340 345 350
 Glu Gln Val Val Thr Ala Leu Asn Glu Ala Gly Val Leu Glu Lys Ser
 355 360 365
 Val Phe Arg His Gly Gly Val Gln Thr Ala Val Val Glu Ser Leu Thr
 370 375 380
 Asp Glu Ala Ala Thr Arg Leu Arg Gln Arg Ala Ala Val Leu Leu Tyr
 385 390 395 400
 Glu Asp Gly Ala Ala Pro Leu Thr Ile Ala Ala Gln Leu Leu Ser His
 405 410 415
 Glu Met Ser Ala Pro Asp Glu Glu Trp Val Pro Arg Val Leu Ser Glu
 420 425 430
 Ala Ala Arg Ala Ala Leu Cys Thr Gln Gln Val Glu Phe Ala Val Arg
 435 440 445
 Cys Leu Arg Met Ala Glu Ser Cys Cys Arg Asp Glu Thr Glu Arg Met
 450 455 460
 Leu Leu Arg Ala His Leu Ala Lys Tyr Ile Trp Arg Val Gln Pro Ser
 465 470 475 480
 Ala Trp Pro Gln Gln Leu Arg Pro Leu Leu Gly Ala Val Arg Asp Gly
 485 490 495
 Leu Leu Pro Pro Val Asp Thr Val Arg Leu Val Tyr Asp Leu Leu Trp
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 Asn Gly Trp Met Asp Asp Ala Ala Ala Ala Ile Arg Gln Val Val Asp
 515 520 525
 Val Leu His Arg Ser Pro Asp Ala Arg Leu Ala Thr Glu Leu Gly Ala
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 Leu Arg Leu Ala Leu Ala Ser Thr Tyr Pro Ala Val Leu Glu His Leu
 545 550 555 560
 Gly Asp Val Pro Ala Pro Ala Arg Gly Ala Gly Glu Arg Leu Ser Ala
 565 570 575
 Gln Glu Glu Ile Leu Leu Thr Ser Ala Arg Val Leu His Gly Val Leu
 580 585 590
 Arg Gly Gly Asp Gly Ala Arg Asp Thr Asp Pro Asp Thr Asp Ala Glu
 595 600 605
 Asp Phe Ala Glu Ser Ala Glu Arg Thr Leu Ala Gly Thr Arg Leu Thr
 610 615 620

Glu Glu Thr His Leu Gly Leu Arg Ala Cys Leu Leu Thr Leu Phe Tyr
 625 630 635 640
 Ala Asp Arg Pro Ala Thr Ala Thr Leu Trp Ala Asp Arg Leu Leu Val
 645 650 655
 Glu Ala Ala Asp Arg Lys Ala Pro Gly Trp Thr Ala Val Leu Arg Ala
 660 665 670
 Ile Arg Ala His Met Ser Leu Arg Arg Gly His Leu Val Glu Ala Arg
 675 680 685
 Arg Leu Ala Glu Gln Ala Leu Asp Gln Leu Pro Pro His Gly Trp Gly
 690 695 700
 Val Gly Ile Gly Met Pro Leu Ser Ala Leu Ile Glu Ala Arg Thr Ala
 705 710 715 720
 Met Gly Asp His Glu Ala Ala Ala Glu Leu Leu Asp Arg Pro Val Pro
 725 730 735
 Glu Asp Met Leu Thr Thr Arg His Gly Leu His Tyr Leu Tyr Ala Arg
 740 745 750
 Gly Arg His Gln Leu Ala Thr Gly Arg His His Ala Ala Leu Thr Asp
 755 760 765
 Phe Thr Ala Cys Gly Glu Leu Met Arg Arg Trp Gly Met Asp Arg Ser
 770 775 780
 Thr Leu Val Pro Trp Arg Val Gly Val Ala Glu Ala Arg Leu Ala Leu
 785 790 795 800
 Gly Ser Arg Glu Glu Ala Glu Arg Phe Ala Arg Glu Gln Leu Ala Gly
 805 810 815
 Asp Ala Gly Gln Arg Val Arg Gly His Ala Leu Arg Val Leu Ala Ala
 820 825 830
 Ala Arg Pro Leu Arg Glu Arg Pro Ala Leu Leu Ala Gln Ala Val Ala
 835 840 845
 Leu Leu Gln Glu Asp Ser Asp Trp Tyr Glu Leu Ala Arg Ala Leu Thr
 850 855 860
 Asp Leu Gly Gln Ala Tyr Lys Gln Leu Gly Asp Pro Ser Gln Gly Lys
 865 870 875 880
 Val His Thr Arg Arg Ala Trp Arg Ile Ala Lys Gly Cys Gly Ala Arg
 885 890 895
 Glu Leu Tyr Arg Ser Leu His Pro Ser Gln Pro Pro Ala Pro Ser Ala
 900 905 910
 Pro Ala Ala Gln Pro Arg Pro Ala Ala Pro Ala Asp Ala Ala Arg Pro
 915 920 925
 Pro Ser Ala Ala Val Ser Ser Leu Thr Asp Ala Glu Arg Lys Val Ala
 930 935 940
 Ala Leu Ala Ala His Gly Tyr Thr Asn Arg Glu Ile Gly Ala Lys Leu
 945 950 955 960

Phe Ile Thr Val Ser Thr Val Glu Gln His Leu Thr Arg Val Tyr Arg
 965 970 975

Lys Ile Asn Ile Thr His Arg Gln Asp Leu Pro Val Ser Leu Asp Thr
 980 985 990

Asp Val Ala His Thr Ala
 995

<210> 64
 <211> 2997
 <212> DNA
 <213> Streptomyces aizunensis

<400> 64
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<210> 65

<211> 518

<212> PRT

<213> Streptomyces aizunensis

<400> 65

Met Thr Thr Thr Val Ile Gly Lys Val Ala Glu Leu Tyr Ala Val Arg
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 Ala Lys Gly Lys Leu Thr Ala Arg Glu Arg Ile Gly Leu Leu Leu Asp
 35 40 45
 Glu Gly Ser Phe Arg Glu Val Glu Gln Leu Arg Arg His Arg Ala Ser
 50 55 60
 Gly Phe Gly Leu Glu Ala Lys Arg Pro Tyr Thr Asp Gly Val Ile Thr
 65 70 75 80
 Gly Trp Gly Thr Ile Glu Gly Arg Thr Val Phe Val Tyr Ala His Asp
 85 90 95
 Phe Arg Ile Phe Gly Gly Ala Leu Gly Glu Ala His Ala Thr Lys Ile
 100 105 110
 His Lys Ile Met Asp Met Ala Ile Ala Ala Gly Ala Pro Leu Val Ser
 115 120 125
 Leu Asn Asp Gly Ala Gly Ala Arg Ile Gln Glu Gly Val Ser Ala Leu
 130 135 140
 Ala Gly Tyr Gly Gly Ile Phe Gln Arg Asn Thr Lys Ala Ser Gly Val
 145 150 155 160
 Ile Pro Gln Ile Ser Val Met Leu Gly Pro Cys Ala Gly Gly Ala Ala
 165 170 175
 Tyr Ser Pro Ala Leu Thr Asp Phe Val Phe Met Val Arg Glu Thr Ser
 180 185 190
 Gln Met Phe Ile Thr Gly Pro Asp Val Val Lys Ala Val Thr Gly Glu
 195 200 205
 Glu Ile Thr Gln Asn Gly Leu Gly Gly Ala Asp Val His Ala Gly Thr
 210 215 220
 Ser Gly Val Ala His Phe Ala Tyr Asp Asp Glu Glu Thr Cys Ile Ala
 225 230 235 240
 Glu Val Arg Tyr Leu Leu Ser Met Leu Pro Ser Asn Asn Arg Glu Asn
 245 250 255
 Pro Pro Ala Val Gln Ala Gly Asp Pro Ala Asp Arg Arg Cys Asp Ala
 260 265 270
 Leu Leu Asn Leu Val Pro Val Asp Gly Asn Arg Pro Tyr Asp Met Leu
 275 280 285
 Lys Val Ile Glu Glu Ile Val Asp Asp Gly Asp Tyr Val Glu Ile His
 290 295 300
 Glu Gly Trp Ser Arg Asn Ile Ile Cys Ala Leu Ala Arg Leu Asp Gly
 305 310 315 320
 Gln Val Val Ala Ile Val Ala Asn Gln Pro Gln Phe Leu Ala Gly Val
 325 330 335
 Leu Asp Ile Gly Ala Ser Glu Lys Ala Ala Arg Phe Val Gln Met Cys
 340 345 350

Asp Ala Phe Asn Ile Pro Ile Val Thr Leu Leu Asp Val Pro Gly Phe
 355 360 365
 Leu Pro Gly Val Asp Gln Glu His Gly Gly Ile Ile Arg His Gly Ala
 370 375 380
 Lys Leu Leu Tyr Ala Tyr Cys Asn Ala Thr Val Pro Arg Ile Ser Leu
 385 390 395 400
 Ile Leu Arg Lys Ala Tyr Gly Gly Ala Tyr Ile Val Met Asp Ser Gln
 405 410 415
 Ser Ile Gly Ala Asp Leu Thr Tyr Ala Trp Pro Thr Asn Glu Ile Ala
 420 425 430
 Val Met Gly Ala Glu Gly Ala Ala Asn Val Ile Phe Arg Arg Gln Ile
 435 440 445
 Ala Glu Ser Gly Asp Pro Glu Ala Met Arg Ala Arg Met Val Lys Glu
 450 455 460
 Tyr Lys Ala Glu Leu Met His Pro Tyr Tyr Ala Ala Glu Arg Gly Leu
 465 470 475 480
 Val Asp Asp Val Ile Asp Pro Ala Glu Thr Arg Glu Val Leu Ile Ala
 485 490 495
 Ser Leu Ala Met Leu Arg Thr Lys His Ala Asp Leu Pro Pro Arg Lys
 500 505 510
 His Gly Asn Pro Pro Gln
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<210> 66

<211> 1557

<212> DNA

<213> *Streptomyces aizunensis*

<400> 66

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 gagcggatcg gccttttctg ggaagagggt tcgttcaggg aggtcgaaca gctgcggcgg 180
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<210> 67

<211> 329

<212> PRT

<213> *Streptomyces aizunensis*

<400> 67

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Thr Asp Arg Thr Leu His Phe Ala Gly Pro Ala Thr Phe Gly Arg Ile
20 25 30

Pro Arg Ile Asp Gln Val Glu Lys Thr Asp Ile Ala Val Val Gly Val
35 40 45

Pro Phe Asp Ser Gly Val Thr Tyr Arg Pro Gly Ala Arg Phe Gly Gly
50 55 60

Asn Ala Ile Arg Glu Ala Ser Arg Thr Leu Arg Pro Tyr Asn Pro Ala
65 70 75 80

Gln Asn Val Tyr Pro Phe His Phe Ser Gln Val Ala Asp Ala Gly Asp
85 90 95

Ile Ser Ala Asn Pro Phe Asp Leu Asn Asp Ala Val Glu Thr Ile Glu
100 105 110

Ala Ala Ala Asp Asp Leu Ile Ser Ser Gly Ala Arg Leu Met Thr Leu
115 120 125

Gly Gly Asp His Thr Ile Ala Leu Pro Met Leu Arg Ala Val Ala Lys
130 135 140

Lys His Gly Pro Leu Ala Val Leu His Phe Asp Ala His Leu Asp Thr
 145 150 155 160
 Trp Asp Asp Tyr Phe Gly Gln Gln Tyr Thr His Gly Met Pro Phe Arg
 165 170 175
 Arg Ala Val Glu Glu Gly Ile Leu Asp Thr Ser Ala Leu Ser His Val
 180 185 190
 Gly Thr Arg Gly Pro Ile Tyr Gly Lys Asp Leu Asp Asp Glu
 195 200 205
 Lys Leu Gly Phe Gly Ile Val Thr Ser Ala Asp Val Met Arg Arg Gly
 210 215 220
 Val Asp Glu Val Ala Gln Gln Leu Arg Glu Arg Val Gly Asp Arg Pro
 225 230 235 240
 Leu Tyr Ile Ser Ile Asp Ile Asp Val Leu Asp Pro Ala His Ala Pro
 245 250 255
 Gly Thr Gly Thr Pro Glu Ala Gly Gly Leu Thr Ser Arg Glu Leu Leu
 260 265 270
 Glu Ile Leu Arg Gly Leu Ala Asp Cys His Leu Val Ser Ala Asp Ile
 275 280 285
 Val Glu Val Ala Pro Ala Tyr Asp His Ala Asp Ile Thr Ser Val Ala
 290 295 300
 Ala Ser His Ala Ala Tyr Glu Leu Ile Ser Ile Met Ser Lys Gln Ile
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 Ala Pro Val Arg Trp Gly Ala Thr Gln
 325

<210> 68

<211> 990

<212> DNA

<213> *Streptomyces aizunensis*

<400> 68

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 cgcttcggcg gcaacgccat ccgggaggcg tccccgaccc tgcgtcccta caaccggcg 240
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 cccttcgacc tgaacgacgc cgtggagacg atcgaggcgg ccgccgacga cctgatctcc 360
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 aagaaggatc tcgacgacga cgagaagctc ggcttcggca tcgtcacctc ggccgatgtg 660

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 ctgtacatct ccatacgacat cgacgtcctg gacccggcgc acgccccggg caccgggcacc 780
 cccgaggccg gcggcctcac ctccccgcgag ctgctggaga tctcgcgagg gctcgcgcgac 840
 tgccacctgg tctccgcgga catcgtggag gtcgctccgg cctacgacca cgccgacatc 900
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<210> 69
 <211> 521
 <212> PRT
 <213> Streptomyces aizunensis

<400> 69

Val Thr Pro Gln Asp His Trp Trp Ser Ala Ser Gln Ser Tyr Val Ser
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 Asp Ile Leu Ser Val Phe Ala Ala Ala Pro Asp Arg Pro Ala Val Asn
 20 25 30
 Trp Arg Gly Glu Thr Ala Ser Gly Gly Glu Leu Ile Arg Ser Val Thr
 35 40 45
 Glu Ala Phe His Ala Leu His Asp Ser Gly Val Arg Ala Gly Asp Val
 50 55 60
 Val Ala Ile Leu Val Ala Pro Asn Ser Pro Glu Met Leu Thr Ala Arg
 65 70 75 80
 Tyr Ala Ala His Leu Leu Gly Gly Ala Val Cys Tyr Leu Arg Ser Thr
 85 90 95
 Asn Pro Gly Thr Ser Glu Val Ala Leu Pro Leu Asp Gln Gln Ile Arg
 100 105 110
 Ile Leu Arg Asp Thr Glu Ala Val Thr Val Tyr Thr Asp Ala Glu Asn
 115 120 125
 Ala Pro Arg Ala Ala Glu Leu Ala Ala Gly Ala Ser Gly Leu Pro Val
 130 135 140
 Thr Cys Leu Thr Gly Glu Ala Arg Lys Arg Glu Ser Ala Glu Asp Ala
 145 150 155 160
 Pro Arg Ala Leu Pro Trp Ala Pro Asp Ala Leu Ala Leu Ile Thr Phe
 165 170 175
 Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly Ile Arg Leu Ala Gly Arg
 180 185 190
 Ala Trp Asn Gly Leu Val Gln Gly Met Val Ala Ala Gly Gly Glu Ala
 195 200 205
 Glu Gly Val Lys Leu Leu Val Thr Thr Pro Leu Ser His Thr Val Gly
 210 215 220

Ser Met Ala Asp Thr Ala Leu Ala Leu Gly Gly Glu Val Tyr Leu His
 225 230 235 240
 Glu Asn Phe Asn Ala Glu Gln Phe Val Asn Thr Val Ala Asp Glu Gly
 245 250 255
 Ile Ala Trp Thr Phe Met Ala Thr Val His Leu Phe Gln Leu Leu Asp
 260 265 270
 His Leu Glu Glu Arg Gly Leu Lys Asp Val Glu Glu Gly Arg Leu Ala
 275 280 285
 Pro Leu Gln Arg Leu Ile Tyr Ser Gly Ser Ala Ala Ala Pro Ala Arg
 290 295 300
 Ile Ala Gln Ala Val Lys Ala Phe Gly Leu Ile Ile Val Gln Ala Tyr
 305 310 315 320
 Gly Thr Gly Glu Thr Gly Arg Leu Thr Thr Leu Phe Pro His Glu His
 325 330 335
 Leu Asp Pro Trp Leu Ser Thr Thr Val Gly Arg Pro Phe Pro Asp Val
 340 345 350
 Glu Val Val Val Gly Asp Gln Glu Ser Gly Ala Pro Leu Ala Thr Gly
 355 360 365
 Glu Val Gly Glu Val Arg Val Arg Ser Pro His Met Met Asp Gly Tyr
 370 375 380
 Thr Gly Asp Pro Ala Ala Thr Ala Lys Val Leu Arg Asp Gly Trp Tyr
 385 390 395 400
 His Thr Gly Asp Ile Gly Tyr Thr Asp Glu His Gly Tyr Leu His Leu
 405 410 415
 Leu Gly Arg Val Ala Asp Val Val Lys Val Asn Gly Val Lys Val His
 420 425 430
 Pro Thr Val Val Glu Arg Glu Leu Leu Ser Leu Ala Gly Val Arg His
 435 440 445
 Ala Ala Val Tyr Gly Val Arg Asp Gln Asp Ala Val Glu His Leu His
 450 455 460
 Ala Thr Ile Val Cys Asp Pro Ala Val Pro Val Glu Thr Asp Ala Ile
 465 470 475 480
 Arg Ala His Leu Ala Gln Ser Leu Ser Gly Leu His Val Pro Glu Lys
 485 490 495
 Ile Ser Val Val Ala Asp Leu Pro Leu Asn Asp Asn Gly Lys Pro Asp
 500 505 510
 Lys Val Arg Leu Gln Leu Leu Asp Ser
 515 520

<210> 70

<211> 1566

<212> DNA

<213> Streptomyces aizunensis

<400> 70

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ggtgaattga ttccggtcgt gaccgagggc ttccacgcac tgcacgacag cggcgtgctc 180
gcgggcatg tctgtgcat cctggtggcg cccaacagcc cggagatgct cagggcacgg 240
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agcagaggtg cccttcgct ggaccagcag atccggatcc tgcgggacac cgaggccgtg 360
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cacaccgtgc gcagcatggc ggacaccgcg ctggcgctgg gcggcgaggt ctacctgcac 720
gagaacttca acgccgaaca gttctcaac accgtggcgc acgagggcat cgcgtggacc 780
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cacaccggcg acatcggtca caccgacgaa caggctatc tgcacctgct gggccgggtc 1260
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<210> 71

<211> 410

<212> PRT

<213> Streptomyces aizunensis

<400> 71

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His Phe Pro Ser Ala Ser Ala Arg Gln Asp Gly Val Asp Ser Gln Ile	35	40	45
Ser Val Trp Cys Ser Asn Asp Tyr Leu Gly Met Gly Gln Asn Pro Gln	50	55	60
Val Ile Glu Ala Met Lys Lys Thr Ile Asp Thr His Gly Val Gly Ser	65	70	75
Gly Gly Ser Arg Asn Ile Gly Gly Thr Asn His Tyr His Val Leu Leu	85	90	95
Glu Ala Glu Leu Ala Asp Leu His Gly Lys Glu Ala Ala Leu Leu Phe	100	105	110
Thr Ser Gly Tyr Thr Ala Asn Asp Gly Ser Leu Ser Val Leu Ala Gly	115	120	125
Thr Pro Lys Asp Thr Ile Val Phe Ser Asp Glu Lys Asn His Ala Ser	130	135	140
Ile Ile Asp Gly Leu Arg His Ser Gly Ala Gln Lys His Ile Phe Arg	145	150	155
His Asn Asp Val Ala His Leu Ala Glu Leu Leu Ala Ala Ala Pro Ala	165	170	175
Asp Arg Pro Lys Leu Ile Val Leu Glu Ser Val Tyr Ser Met Ser Gly	180	185	190
Asp Ile Ala Pro Leu Ala Glu Ile Ala Glu Leu Ala Arg Arg Tyr Asp	195	200	205
Ala Thr Thr Tyr Ile Asp Glu Val His Ala Val Gly Met Tyr Gly Pro	210	215	220
Gln Gly Ala Gly Ile Ala Ala Arg Glu Gly Ile Ala Asp Gln Phe Thr	225	230	235
Val Val Met Gly Thr Leu Ala Lys Gly Tyr Gly Thr Val Gly Gly Tyr	245	250	255
Ile Ala Gly Pro Ala Ala Leu Val Asp Ala Val Arg Thr Leu Ser Arg	260	265	270
Ala Phe Val Phe Thr Thr Ser Leu Pro Pro Ala Val Ala Ala Gly Ala	275	280	285
Leu Glu Ala Val Arg Tyr Leu Arg Asn Ser Asp Val Glu Arg Lys Val	290	295	300
Leu Ala Glu Asn Ala Gln Leu Leu His Arg Leu Leu Asp Glu Ala Asp	305	310	315
Ile Pro Phe Ile Ser Pro Asp Ser His Ile Val Ser Ala Phe Ile Gly	325	330	335
Asp Asp Glu Thr Cys Lys Gln Ala Ser Arg Leu Leu Phe Glu Arg His			

340 345 350
 Gly Ile Tyr Val Gln Ser Ile Asn Ala Pro Ser Val Pro Leu Gly Gln
 355 360 365
 Glu Ile Leu Arg Ile Ala Pro Ser Thr Val His Gly Arg Glu Asp Val
 370 375 380
 Glu Asn Phe Ala Glu Ala Leu Arg Gly Ile Trp Lys Glu Leu Asn Ile
 385 390 395 400
 Pro Thr Ala Thr Asp Arg Asn Trp Leu Ser
 405 410

 <210> 72
 <211> 1233
 <212> DNA
 <213> Streptomyces aizunensis

 <400> 72
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 caggacggcg tggactccca gatcagcgtc tggcgagca acgactacct cggtatgggg 180
 cagaaccccc aggtcatcga ggcgatgaag aagaccatcg acaccacagg cgtgggctcc 240
 ggcggctcgc ggaacatcgg tggcaccaac cactaccacg tgctgctcga agcggagctg 300
 gcggaacctc acggcaagga ggcggcgctc ctcttcacct ccggctacac ggccaacgac 360
 ggttcctga gcgtcctggc cgggacgccc aaggacacga togtcttctc cgacgagaag 420
 aaccacgcgt cgatcatcga cgggctgcgg cacagcgcg cgacagaagca catcttcggg 480
 cacaacgacg tcgcgcacct ggcggagctg ctgcggcgcc ccccggccga ccgtccgaag 540
 ctgatcgtcc ttgagtcggt ctattcgatg tcgggcgaca tcgcgccgct ggccgagatc 600
 gccgagctcg cgcgcgcgta cgacgccacc acgtacatcg acgaggtgca cgcggtcggc 660
 atgtacggtc cgcagggcgc cggcatcgcc gccggtgagg gcatagccga ccagttcacc 720
 gtcgtgatgg gcacgctggc caagggtac ggacccgtcg gcggtacat tgccggtccc 780
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 gagcggaagg tgctggcgga gaacgccag ctgctgcacc ggctgctcga tgaggccgac 960
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 ccgacggcca ccgacaggaa ctggctttcg tga 1233

<210> 73
 <211> 506
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 73

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Val Thr Arg Ser Val Ala Ala Val Leu Ala Glu Ser Ala Gly Arg Trp
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Pro Ser Arg Thr Ala Leu Val Cys Gly Ala Glu Arg Ile Ser Tyr Ala
          20          25          30

Arg Leu Trp Asp Arg Ala Arg Arg Tyr Ala Ala Ala Leu Arg Gly Gln
          35          40          45

Gly Ile Gly Pro Asp Asp Lys Val Ala Leu Leu Met Pro Asn Thr Pro
50          55          60

Glu Phe Ala Ala Val Tyr Phe Ala Val Leu Ala Leu Gly Ala Val Val
65          70          75          80

Val Pro Val His Thr Leu Leu Lys Pro Ala Glu Val Ser His Leu Leu
          85          90          95

Arg Asp Ser Gly Ala Arg Ala Leu Val Trp Ala Gly Thr Leu Pro Gln
          100          105          110

Glu Thr Ala Arg Asp Ala Gly Glu Thr Gly Val Leu Leu Leu Thr Val
          115          120          125

Gly Glu Ala Leu His Gly Ser Val Leu Leu Asp Asp Gly Val Glu Pro
          130          135          140

Ile Asp Thr Tyr Val Glu Arg Gly Ala Asp Asp Leu Ala Leu Val Leu
145          150          155          160

Tyr Thr Ser Gly Thr Thr Gly Arg Pro Lys Gly Ala Met Leu Thr His
          165          170          175

Gly Asn Val Ala Thr Asn Ile Ala Val Thr Ala Val Ser Pro Phe Ala
          180          185          190

Phe Gly Glu Asp Asp Val Leu Leu Gly Ala Leu Pro Leu Ser His Thr
          195          200          205

Phe Gly Gln Ile Cys Gly Met Ala Val Thr Phe His Ala Gly Ala Thr
          210          215          220

Leu Val Val Met Glu Arg Phe Glu Ala His Asp Ala Leu Arg Leu Met
225          230          235          240

Arg Glu His Gly Cys Thr Val Phe Met Gly Val Pro Thr Met Tyr His
          245          250          255

Ala Leu Leu Glu Ala Val Ala Ala Gly Ala Pro Ala Pro Arg Leu Thr
          260          265          270

Arg Val Tyr Ser Gly Gly Ser Ala Leu Pro Val Pro Val Leu Asp Arg
          275          280          285

Val Arg Ala Ala Phe Gly Cys Glu Val Tyr Glu Gly Tyr Gly Leu Thr
          290          295          300
  
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Glu Thr Ser Pro Cys Val Ala Tyr Asn Gln Pro Gly Ile Pro Cys Lys
 305 310 315 320
 Pro Gly Thr Val Gly Leu Pro Ile Asp Gly Val Arg Val Ala Ile Ala
 325 330 335
 Asp Ala Glu Leu Glu Gly Arg Ile Arg Leu Leu Lys Gln Gly Asp Ile
 340 345 350
 Gly Glu Ile Val Val Ser Gly His Asn Val Met Ala Gly Tyr Leu Gly
 355 360 365
 Arg Pro Gln Glu Thr Ala Glu Val Leu Val Asp Gly Trp Phe Arg Thr
 370 375 380
 Gly Asp Met Gly Val Gln Asp Glu Asp Gly Tyr Leu Ser Ile Val Asp
 385 390 395 400
 Arg Lys Lys Asp Met Ile Val Arg Gly Gly Tyr Asn Val Tyr Pro Arg
 405 410 415
 Glu Val Glu Asp Val Leu Leu Arg His Pro Ala Val Asp Gly Ala Cys
 420 425 430
 Val Val Gly Val Pro Ser Val Lys His Gly Glu Glu Val Cys Ala Val
 435 440 445
 Val Arg Val Lys Pro Gly Gln Arg Ala Ser Gly Leu Leu Ala Glu Glu
 450 455 460
 Ile Val Ala Trp Ser Arg Val His Met Ala Ala Tyr Lys Tyr Pro Arg
 465 470 475 480
 Arg Val Glu Phe Val Glu Thr Phe Pro Leu Gly Ser Ser Gly Lys Val
 485 490 495
 Leu Lys Arg Glu Leu Ala His Arg Tyr Ala
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<210> 74

<211> 1521

<212> DNA

<213> Streptomyces aizunensis

<400> 74

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 tacgcgcgg ccttcgcgg ccagggcacc ggcgccgacg acaaggtcgc gctgctgatg 180
 ccgaacaccc cggagttcgc ggcgggtgtac ttgcgggtgc tcgcgctcgg cgccgtcgtc 240
 gtcccggtcc acaccctgct gaagcccgcg gaggtctcgc atctcctcgg ggaactcgga 300
 gcgcggggcc tcgtatgggc cgggacgctc ccgcaggaga ccgcacggga cgccggggag 360
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 ggcgtcgagc ccacgcacac gtatgtcgag cggggggcgg acgacctcgc gctggtgctg 480
 tacacctcgg gtacgacggg caggccgaag ggggcgatgc tcacgcacgg caacgtcggc 540

acgaacatcg ccgtagccgc cgtgtccccc ttgcctctcg gcgaggacga cgtgctgctc 600
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 ctggcacacc gctacgcgtg a 1521

<210> 75
 <211> 217
 <212> PRT
 <213> Streptomyces aizunensis

<400> 75

Val Pro Thr Arg Thr Val Glu Glu Asp Ile Glu Ile Val Leu Ile Val
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 Arg Asp Asp Met Arg Arg Tyr Gly Val Glu Gly Met Cys Arg Ser Leu
 20 25 30
 Asp Thr Pro Val Glu Ala Gln Ser Tyr Ala Asp Phe Asp Asp Leu Asp
 35 40 45
 Pro Phe Ser Gly Gly Gln Leu Val Ile Leu Ser Ser Asp Ala Ala Gly
 50 55 60
 Pro Leu Ser Ala Glu Thr Ala Glu Ser Leu Arg Thr His Glu Ile Pro
 65 70 75 80
 Val Leu Ile Leu Val Asp Ser Ala Ala Pro Val Glu Gln Ser Trp Ala
 85 90 95
 Asp Gln Ala Arg Gly Phe Leu Asp Trp Ala Asp Leu Arg Pro Asp Thr
 100 105 110

Leu Arg Asp Ala Ile Ala Asp Val Ala Ala Gly Arg Phe Phe Ala Ser
 115 120 125
 Glu Thr Leu Ala Arg Arg Ser Val Thr Ala Ala Glu Gln Thr Glu Gly
 130 135 140
 Gly Thr Pro Ala Ala Arg Ser Pro Ile Thr Leu Thr Ala Arg Glu Leu
 145 150 155 160
 Gln Val Leu Arg Leu Ile Ala Gly Gly Leu Ser Asn Arg Gln Ile Ala
 165 170 175
 Arg Ser Leu Asn Ile Ser Glu His Gly Val Lys Arg Leu Val Gly Ile
 180 185 190
 Val Leu Ala Lys Leu Asn Cys Pro Asn Arg Thr Leu Ala Val Val Arg
 195 200 205
 Ala Ile Asp Ala Gly Leu Leu Thr Leu
 210 215

<210> 76
 <211> 654
 <212> DNA
 <213> *Streptomyces aizunensis*
 <400> 76
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<210> 77
 <211> 442
 <212> PRT
 <213> *Streptomyces aizunensis*

<400> 77

Met Thr Lys Asn Gln Glu Pro Arg Asp Pro Ser Gly Thr Arg Pro Arg
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 20 25 30

Thr Gly Pro Gly Gly Pro Pro Ala Ala Ala Asp Ser Gln Ile Thr Leu
 35 40 45
 Arg Ser Pro Ala Glu Leu Ala Asp Ala Leu Pro Tyr Met Leu Gly Phe
 50 55 60
 His Pro Thr Asp Ser Leu Val Met Val Ala Leu His Gly Glu Gly Gly
 65 70 75 80
 Arg Phe Gly Gly Arg Leu Arg Val Gly Ile Pro Thr Asp Arg Gly Glu
 85 90 95
 Trp Glu Asp Thr Ala Arg Gln Val Ala Asp Cys Leu Val His Gly Ser
 100 105 110
 Glu Arg Arg Gly Gly Lys Pro Asp Gly Ile Val Val Phe Leu Cys Gln
 115 120 125
 Asp Pro Arg Gly Gly Glu Ser Gly Gln Arg Val Met Thr Arg Leu Arg
 130 135 140
 Pro Leu Ala Gln Arg Ile Arg Leu Ala Cys Gly Ala Leu Asp Val Pro
 145 150 155 160
 Val Leu Glu Ala Leu Cys Leu Ser Gly Gly Arg Tyr Trp Ser Tyr Cys
 165 170 175
 Cys Pro Asp Ala Arg Cys Cys Pro Ala Glu Gly Thr Ala Leu Thr Val
 180 185 190
 Pro Gly Thr Ser Val Met Ala Ala Ala Thr Tyr Ala Gly Leu Arg
 195 200 205
 Val Arg Gly Ser Leu Gln Glu Ile Glu Gly Arg Leu Ala Pro Leu Arg
 210 215 220
 Gly Pro Leu Ala Asp Glu Gln Glu Arg Ser Leu Asp Leu Ala Ala Thr
 225 230 235 240
 Ala Leu Val Pro Lys Ile Leu Asp Gly Ala Thr Arg Glu Asp Val Gly
 245 250 255
 Ala Asp Thr Leu Glu Leu Ala Arg Thr Leu Met Arg Arg Leu Thr Leu
 260 265 270
 Ala Pro Pro Ala Asp Gly Gly Pro Cys Ala Glu Asp Trp Asp Asp Ala
 275 280 285
 Leu Leu Gly His Asp Glu Ala Ala Ser Leu Ile Leu Gly Leu Gln Asp
 290 295 300
 Arg Glu Ile Arg Asp Ile Ala Ala Glu Trp Met Glu Gly Glu Glu Ala
 305 310 315 320
 Ala Pro Ala Leu Arg Leu Trp Arg Ala Leu Ala Arg Arg Cys Val Gly
 325 330 335
 Ala Tyr Gly Glu His Ala Ala Ala Pro Leu Thr Leu Ala Gly Trp Val
 340 345 350
 Ser Trp Ser Thr Gly Asp Glu Pro Thr Ala Arg Ile Ala Leu Gly Met
 355 360 365

Ala Leu Arg Ala Asp Ala Asp Tyr Arg Phe Ala Gln Leu Leu His His
 370 375 380

Ala Cys Asn Glu Gly Ile Asp Pro Glu Gly Leu Arg Glu Cys Leu Arg
 385 390 395 400

Ala Glu Arg Gly Arg Arg Glu Pro Arg Arg Ala Arg Ala Ala Val
 405 410 415

Thr Arg Pro Pro Gly Arg Arg Pro Arg Thr Thr Arg Pro Ala Pro Arg
 420 425 430

Asp Arg Arg Arg Thr Ala Gly Ser Glu Gln
 435 440

<210> 78

<211> 1329

<212> DNA

<213> *Streptomyces aizunensis*

<400> 78

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 gccgccgcat cacagatcac cctgcgcagc cgggcogaac tggccgagc cctgccttac 180
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 gcccgcgagg tcgccgactg cctgggtcac ggcagcgaac ggccggcgcg caagcccgcac 360
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gggcggcgtc cccggaccac ccgccccgca ccccgtagcc ggcgccgcac ggcggggagc 1320
gagcagtga 1329

0-1	Form - PCT/RO/134 (EASY) Indications Relating to Deposited Microorganism(s) or Other Biological Material (PCT Rule 13bis) Prepared using	PCT-EASY Version 2.92 (updated 01.04.2003)
0-2	International Application No.	PCT/CA 2 004 / 000068
0-3	Applicant's or agent's file reference	30048PCT
1	The Indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
1-1	page	45
1-2	line	4
1-3	Identification of Deposit	
1-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
1-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
1-3-3	Date of deposit	07 August 2003 (07.08.2003)
1-3-4	Accession Number	NMLHC IDAC 070803-01
1-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
1-5	Designated States for Which Indications are Made	all designated States
1-6	Separate Furnishing of Indications These indications will be submitted to the International Bureau later	NONE
2	The Indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
2-1	page	45
2-2	line	10

2-3	Identification of Deposit	
2-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
2-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
2-3-3	Date of deposit	23 December 2003 (23.12.2003)
2-3-4	Accession Number	NMLHC IDAC 231203-02
2-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
2-5	Designated States for Which Indications are Made	all designated States
2-6	Separate Furnishing of Indications These indications will be submitted to the International Bureau later	NONE
3	The indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
3-1	page	44
3-2	line	27
3-3	Identification of Deposit	
3-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
3-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
3-3-3	Date of deposit	25 February 2003 (25.02.2003)
3-3-4	Accession Number	NMLHC IDAC 250203-01
3-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.

3-5	Designated States for Which Indications are Made	all designated States
3-6	Separate Furnishing of Indications These Indications will be submitted to the International Bureau later	NONE
4	The indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
4-1	page	44
4-2	line	27
4-3	Identification of Deposit	
4-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
4-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
4-3-3	Date of deposit	25 February 2003 (25.02.2003)
4-3-4	Accession Number	NMLHC IDAC 250203-02
4-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
4-5	Designated States for Which Indications are Made	all designated States
4-6	Separate Furnishing of Indications These Indications will be submitted to the International Bureau later	NONE
5	The indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
5-1	page	44
5-2	line	27
5-3	Identification of Deposit	
5-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
5-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
5-3-3	Date of deposit	25 February 2003 (25.02.2003)
5-3-4	Accession Number	NMLHC IDAC 250203-03

5-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
5-5	Designated States for Which Indications are Made	all designated States
5-6	Separate Furnishing of Indications These indications will be submitted to the International Bureau later	NONE
6	The indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
6-1	page	44
6-2	line	27
6-3	Identification of Deposit	
6-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
6-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
6-3-3	Date of deposit	25 February 2003 (25.02.2003)
6-3-4	Accession Number	NMLHC IDAC 250203-04
6-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
6-5	Designated States for Which Indications are Made	all designated States
6-6	Separate Furnishing of Indications These indications will be submitted to the International Bureau later	NONE
7	The indications made below relate to the deposited microorganism(s) or other biological material referred to in the description on:	
7-1	page	44
7-2	line	28

7-3	Identification of Deposit	
7-3-1	Name of depositary institution	National Microbiology Laboratory, Health Canada
7-3-2	Address of depositary institution	Federal Laboratories for Health Canada, Room H5190, 1015 Arlington Street, Winnipeg, Manitoba, Canada R3E 3R2
7-3-3	Date of deposit	25 February 2003 (25.02.2003)
7-3-4	Accession Number	NMLHC IDAC 250203-05
7-4	Additional Indications	A request to restrict access to a sample of any deposit of biological material pertaining to the above noted International application is made with respect to all designated states having enacted any such provisions in their respective national legislation. Australia Notice under Regulation 3.25 (3); CBE Rule 28(4); Canadian Patent Rules, Section 104(4) Notice.
7-5	Designated States for Which Indications are Made	all designated States
7-6	Separate Furnishing of Indications These indications will be submitted to the International Bureau later	NONE

FOR RECEIVING OFFICE USE ONLY

0-4	This form was received with the International application: (yes or no)	yes
0-4-1	Authorized officer	Chantal Hébert

FOR INTERNATIONAL BUREAU USE ONLY

0-5	This form was received by the International Bureau on:	
0-5-1	Authorized officer	

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000068

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07H15/203 C07H15/26 C07H15/10 C07C229/30 C07C237/16
C12P19/44 A61K31/7032 A61P31/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07H C07C C12P A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

BIOSIS, EPO-Internal, BEILSTEIN Data, EMBASE, WPI Data, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SAKUDA S ET AL: "NOVEL LINEAR POLYENE ANTIBIOTICS: LINEARMYCINS" JOURNAL OF THE CHEMICAL SOCIETY, PERKIN TRANSACTIONS 1, CHEMICAL SOCIETY. LETCHWORTH, GB, no. 18, 1996, pages 2315-2319, XP001189502 ISSN: 0300-922X cited in the application page 2317	1-29
X	CA 2 352 451 A (ECOPIA BIOSCIENCES INC) 28 October 2001 (2001-10-28) page 24	14, 15
P, X	WO 03/062458 A (ZAZOPOULOS EMMANUEL ; FARNET CHRIS M (CA); STAFFA ALFREDO (CA); WON) 31 July 2003 (2003-07-31) page 58	1-5, 7-9, 11-19, 24

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

I later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

Z document member of the same patent family

Date of the actual completion of the international search

2 June 2004

Date of mailing of the international search report

11/06/2004

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Authorized officer

Steendijk, M

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA2004/000068

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CA 2352451	A	28-10-2001	CA 2352451 A1	28-10-2001
WO 03062458	A	31-07-2003	WO 03062458 A2	31-07-2003
			CA 2414570 A1	03-04-2003
			US 2003180766 A1	25-09-2003